

Health Plan Performance Measurement within Medicare Subvention

BJC Managed Care, BJC Health System

St. Louis, Missouri

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June, 1998

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE AUGUST 1998		3. REPORT TYPE AND DATES COVERED FINAL REPORT (07-97 TO 07-98)
4. TITLE AND SUBTITLE HEALTH PLAN PERFORMANCE MEASUREMENT WITHIN MEDICARE SUBVENTION			5. FUNDING NUMBERS	
6. AUTHOR(S) CAPTAIN DAVID L. JOHNSON, MSC				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) BJC HEALTH SYSTEM, MANAGED CARE 120 SOUTH CENTRAL, SUITE 1200 ST LOUIS, MO 63105			8. PERFORMING ORGANIZATION REPORT NUMBER 34C-98	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) US ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL BLDG 2841 MCCS-HRA US ARMY-BAYLOR PROGRAM IN HCA 3151 SCOTT RD SUITE 1412 FORT SAM HOUSTON, TX 78234-6135			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The Military Health Service (MHS), feeling growing pressure to keep costs down and quality up, must be able to strike a cost-quality balance. Success of initiatives like the Medicare Subvention Demonstration Project is dependent on the ability to strike such a balance--and the ability to monitor it. MHS's lack of Medicare HMO experience necessitates the development and adoption of reliable performance measurement systems. Project managers must align organizational mission and health plan performance. Current military measurement initiatives--the Air Force Medical Service Performance Measurement Tool (AFMS PMT) and the MHS Performance Report Card--compare well to major civilian initiatives. MHS performance measurement systems do, however, require modification to be useful for Medicare health plan management. Emphasis on Medicare population-specific indicators must be included--indicators that stress the importance of long-term versus short-term measurement, wellness and prevention versus treatment and reaction, and primary care investment versus specialty care expenditure. The uniqueness of the Medicare subvention project make it unlikely that any one of the initiatives studied would be sufficient in subvention measurement. However, the combination of the AFMS PMT with two civilian initiatives holds promise as an ideal subvention project performance measurement system.				
14. SUBJECT TERMS Medicare subvention, MHS performance measurement, MHS Performance Report Card, Air Force Medical Service Performance Measurement Tool			15. NUMBER OF PAGES 78	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT N/A	18. SECURITY CLASSIFICATION OF THIS PAGE N/A	19. SECURITY CLASSIFICATION OF ABSTRACT N/A	20. LIMITATION OF ABSTRACT UL	

Running Head: MEDICARE SUBVENTION PERFORMANCE MEASUREMENT

Health Plan Performance Measurement within Medicare Subvention

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Acknowledgements

Particular gratitude is due to the two people who played a key role in the development of this Graduate Management Project: Colonel Charles W. (Charlie) Sampson, U. S. Marine Corps (Retired), Vice President, Managed Care, BJC Health System and President, Care Partners HMO, St Louis, MO; and Mr. Emmette B. Craft, Director, Managed Care Contracting, BJC Health System, St Louis, MO, as well as poet, artists, philosopher, and former U. S. Navy UDT Officer and Atlanta Brave.

Charlie and Emmette provided an excellent forum in which to explore health plan performance measurement by completely assimilating me into the BJC Managed Care culture. Charlie challenged me to find a value-added project that would operationalize my residency experience. Thanks to Emmette for taking topic exploration to a greater depth with his “and so...” and “so what...” comments.

The aim of this Graduate Management Project is to provide an opportunity to integrate newly gained academic knowledge with the priceless experiences gained from working with BJC Health System. Personal involvement with several managed care projects led to the selection of this topic. Those projects included Medcomp (an integrated medical information system used in support of at-risk managed care contracts), MSO Formation (the build-up and start-up of a Medical Service Organization), and Renaissance (the development of a new Medicare HMO via newly enacted Provider Sponsored Organization legislation). Major project work within BJC Managed Care forms the conceptual basis for this study, and a follow-on assignment in the Keesler AFB TRICARE Flight provides a forum in which to operationalize study findings in the context of the Medicare Subvention Demonstration Project.

Abstract

The Military Health Service (MHS), feeling growing pressure to keep costs down and quality up, must be able to strike a cost-quality balance. Success of initiatives like the Medicare Subvention Demonstration Project is dependent on the ability to strike such a balance—and the ability to monitor and report it. MHS's lack of Medicare HMO experience necessitates the development and adoption of reliable performance measurement systems. Project managers must align organizational mission and health plan performance. Current military measurement initiatives—the Air Force Medical Service Performance Measurement Tool (AFMS PMT) and the MHS Performance Report Card—compare well to major civilian initiatives—the Consortium Research on Indicators of System Performance (CRISP), the Comprehensive Healthcare Analysis and Management Program, the Health Plan Employer Data and Information Set (HEDIS) and two related research projects from the Health Care Advisory Board. MHS performance measurement systems do, however, require modification to be useful for Medicare health plan management. Emphasis on Medicare population-specific indicators must be included—indicators that stress the importance of long-term versus short-term measurement, wellness and prevention versus episodic treatment and reaction, and primary care investment versus specialty care expenditure. The uniqueness of an MHS Medicare Subvention Project environment make it unlikely that any one of the initiatives studied would be sufficient in Medicare health plan performance measurement. However, the combination of three models (AFMS PMT, CRISP, and HEDIS) holds promise as a model Medicare Subvention Demonstration Project performance measurement system. AFMS PMT and CRISP provide the means to monitor health plan performance and HEDIS provides the means to benchmark and report health plan performance improvement.

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Introduction

Twenty years ago, managed care was considered an emerging set of techniques that could be used to manage health care costs by influencing provider decisions (Gray & Field, 1989). What was then considered an optional activity aimed at revenue enhancement and cost reduction has since become a dominating force. Managed care principles are being employed in varying degrees across the entire health care spectrum (Fox, 1996, p. 3). Management of military healthcare delivery is no exception.

As with civilian health care organizations, the Military Health Service (MHS), formerly Military Health Service System (MHSS), is feeling growing pressure to keep costs down and quality up (Grier, 1998, p 41). Over the last ten years, the number of military treatment facilities (MTFs) providing services have decreased by 35 percent while corresponding force reductions account for only a nine percent decrease in eligible beneficiaries (Joseph, 1997b). To compound the problem, the 1998 defense budget was almost \$200 million less than expected. Dr. Ed Martin, Acting Assistant Secretary of Defense for Health Affairs, remarked that “despite insufficient funding, the MHS must live within the appropriation so as not to compromise patient care (Gillert, 1997). In such an environment, striking a cost-quality balance that maintains access and quality yet controls cost becomes the challenge. Central to striking this balance is the ability to measure health plan performance (Konstvedt, 1996).

Selecting key performance indicators, those “few areas of activity necessary for a particular organization to achieve its purpose” (Rockart as cited in Duncan, Ginter, & Swayne, 1995, p. 198), enables health plan executives to gauge performance. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) (n.d./1998b) echoes the importance of performance measurement:

As quality of care becomes an even more visible public issue, increased attention is being given to the effectiveness of current quality oversight processes and systems. The growing demand for objective, comparative information about the performance of health care organizations has created a need for data-driven evaluation processes. (p. 1)

As military healthcare evolves, fewer and fewer differences exist between MHS and civilian health systems. The adoption of enrollment-based capitation (EBC) by MHS facilities, starting Fiscal Year 1998, significantly “grayed” the distinction between the two. EBC divides the annual Defense Health Plan (DHP) appropriation on a per capita basis and “provides the proper incentives to encourage every commander, provider, and decision maker to be fully accountable for delivering high-quality, cost-effective healthcare services to [MHS] beneficiaries” (Martin, 1997, p. 1). Such a goal must be supported by a robust performance measurement system.

The need for health plan performance measurement forms the heart of this study. The purpose of this study is to determine if current MHS performance measurement systems are adequate to evaluate health plan effectiveness. “Health plan” will be operationally defined as an “arrangement by which persons, including dependents or spouses, covered or making application to be covered under this pool, have access to hospital and medical benefits or reimbursement” (Washington State Legislature, n.d./1998). In the context of the MHS, a Medicare Subvention Demonstration Project at a particular MTF may be considered a health plan.

Medicare subvention, also called TRICARE Senior Prime, extends health maintenance organization (HMO) type benefits in the form of guaranteed access to MTFs and primary care managers (PCMs) to Medicare-eligible, retired military personnel, their family members, and survivors. The fiscal year 1997 Defense Authorization Bill (1997) defines Medicare subvention

as a program where the MHS would be reimbursed by the Health Care Financing Administration (HCFA) for care provided to Medicare-eligible beneficiaries. The bounds of the three-year project are twofold. First, the MHS must continue to maintain historical levels of care, or level of effort (LOE), provided to Medicare-eligible beneficiaries. The second provision ensures budget neutrality to the overall federal program for additional care provided (Joseph, 1997a). This demonstration project makes the ability to accurately measure MHS health plan performance more critical than ever. Successful scoring of the demonstration project is central to a win-win relationship for beneficiaries and the federal program.

The research question, framed within the environment of Medicare subvention, is: **Are current MHS performance measurement systems adequate to evaluate Medicare Subvention Demonstration success?** Conclusions will be drawn from a comparison of current military and civilian measurement initiatives. Primary initiatives to be compared include: (a) the Air Force Medical Service Performance Measurement Tool (Foster, 1998; Air Force Medical Service, 1998), (b) the MHS Performance Report Card (Health Services Analysis and Measurement, 1997), (c) the Consortium Research on Indicators of System Performance (Nerenz, Zajac, & Rosman, 1993), (d) the Comprehensive Healthcare Analysis and Management Program (Mercer, 1997), (e) the Health Plan Employer Data and Information Set (National Committee for Quality Assurance, 1997c; 1998), and (f) two related research projects from the Health Care Advisory Board (1995; 1996a).

Limitations

It is important to note that although parallels can be drawn between civilian and military performance measurement methodologies, resulting measures may not be reliably compared—significant differences exist. For example, provider motivation in a typical civilian organization

is driven, in part, by monetary factors. The vast majority of physicians' salaries are based on work done (fee-for-service models) or on work not done (capitation models) (Gapenski, 1996). Military physicians, however, are salaried providers whose wage is not subject to risk pooling or the volume of work produced. While typical managed care elements, such as utilization and case management, are used in military organizations, physicians have little personal incentive for efficiency. Efficiency does not affect their incomes.

Different organizational missions also contribute to the difficulty in drawing direct comparisons. For-profit and not-for-profit civilian health care organizations are expected to return value to their owners: maximized profits and/or expanded services. Both require excess revenue in order to accomplish this mission (Griffith, 1995; see also Shukla, Pestian, & Clement, 1997). The MHS mission, however, centers around medical readiness which "provides health care services and support to the Armed Forces, in all operational environments, and care for other authorized beneficiaries" (Office of the Assistant Secretary of Defense, Health Affairs [OSD (HA)] n.d./1998, p. 5).

The Department of Defense (DoD) (1995) Medical Readiness Strategic Plan (MRSP) defines medical readiness as:

the ability to mobilize, deploy and sustain field medical services and support for any operation requiring military services; to maintain and project the continuum of healthcare resources required to provide for the health of the force; and to operate in conjunction with beneficiary healthcare. (p. i)

In peacetime, MHS medical systems and organizations for wartime support provide healthcare in much the same manner as civilian counterparts; however, recent changes in U. S. foreign and domestic policy significantly impacts the Defense medical community. These

policies, coupled with budget and personnel reductions in the armed forces, force MHS leaders to place more emphasis on the primary mission: medical readiness (DoD, 1995, p. 6). The MHS must strive to provide all support required within annual budgetary constraints (Hart & Connors, 1996). Since potential MHS workload exceeds current and projected capability, little room exists for the accumulation of any operating surplus (revenue).

Another possible limitation of the study is rooted in mandated measurement systems for the subvention test. DoD's Corporate Executive Information System (CEIS) is the official source of demonstration data as prescribed by the OSD (HA) annotated version of the Code of Federal Regulations, Title 42, Volume 2, Section 417.126 (HCFA, 1997). The limitation lies in the fact that, although CEIS is the state-of-the-art MHS performance measurement system (Corporate Executive Information System Executive Agent [CEIS (EA)], 1998), DoD lacks experience in managing and measuring senior healthcare delivery. Baseline information must be retrospectively extracted from legacy information systems that were not designed to capture Medicare-related data. The ability to measure demonstration project success is dependent on validation of historical data.

Finally, the official scoring methodology of the demonstration project is a potential limitation of this study. The General Accounting Office (GAO) will accomplish the actual project scoring. The Comptroller General will determine the extent, if any, to which MHS and HCFA costs have increased as a result of the subvention program (Hefley, 1997, p. 3); however, the criteria used in the cost determination has not been provided to either the MHS or HCFA. Effective project management is highly dependent on accurate health plan performance measurement. Early reconciliation between performance measurement systems used by

demonstration managers and those employed by GAO is crucial to avoid ambiguity in the evaluation process.

While the study focuses on performance measurement data elements, or indicators, versus specific data values, it is important to briefly touch on inherent limitations of existing MHS data. Even the most up-to-date, sophisticated MHS information system, CEIS, is only as good as the data it receives. CEIS receives data feeds from a variety of component legacy systems (described in Appendix B) that will be maintained until their functionality has been incorporated in CEIS and CEIS is fully deployed (CEIS (EA), 1998). Unfortunately, the MHS has historically been more successful in providing cost-efficient, quality health care than it has been at quantifying and reporting on its health care delivery process (B. J. Kerr, personal communication, February, 1997). Data reported through legacy systems has been notoriously inaccurate. In fact, Alan Constantine (1998) from the Health Program Analysis and Evaluation Directorate of the TRICARE Management Activity (TMA) recently remarked that “data quality borders on crisis.” The TMA (1998) stresses that “data quality is paramount and MEPRS [Medical Expense and Performance Reporting System] data are key to accurate cost determination and pricing” (p. 31). Significant efforts aimed at data quality must precede meaningful performance comparison.

Literature Review

An overview of performance measurement in the healthcare industry is better understood in the frame of “how did we get here?” (Mason & Dawson, 1998). Table 1 provides a summary of sentinel themes and industry’s response.

Table 1

Healthcare Response and Focus to Industry Evolution

Theme	Response	Planning Focus
Access	Hill Burton	Facilities planning
Expand capabilities	Regional Medical Programs (RMP) Comprehensive Health Planning (CHP)	Program planning
Excess capacity, uncontrolled cost	Prospective Payment System (PPS) Shift to managed care	Strategic Planning
Medical Management Disease Management Demand Management	Clinical performance Improvement	Performance based planning

Note. From "Competing on Quality and Clinical Outcomes," by S. A. Mason and S. Dawson, 1998, Presentation at American College of Healthcare Executives Congress on Healthcare Management, March 2, 1998.

Access to healthcare was a major issue in the early 1940s. Few hospitals had been constructed between the Depression and World War II, manifesting in a severe shortage of hospital beds across the nation. The government responded with the Hill Burton Act, the Government's first intervention into health planning. The program provided assistance to states and communities in the form of both planning and federal matching grants. Hill Burton effectively solved the short-term problem of access by assisting in the construction of nearly 40 percent of the nation's hospitals (Mason & Dawson, 1998; see also Williams & Torrens, 1993).

The next major theme in U.S. healthcare was the expansion of system capabilities. Government's answer was Regional Medical Programs (RMP) and Comprehensive Health Planning (CHP). The RMP Act was a federal program focusing on funding and planning for detection and treatment of specific health problems such as cancer and heart disease. CHP

represented the next step in the federal planning process. CHP was developed in an attempt to tie Medicare and Medicaid funding to initiatives that encouraged more cost-effective healthcare delivery. Unfortunately, the effort to promote voluntary health planning through a consortium of local, state, and federal agencies failed to generate any measurable increase in either access to care or quality of care (Mason & Dawson, 1998; see also Williams & Torrens, 1993).

The third theme became apparent in the early 1980s: an effort to attack excess capacity and uncontrolled cost. Prospective payment, fixed fees based on diagnosis rather than on the procedure performed, announced the shift from fee-for-service reimbursement to managed care. Medicare fee schedules were devised and inpatient costs were capped according to diagnostic categories called diagnostic related groups (DRGs). With Medicare, the largest payor in the U.S., taking the lead, commercial insurers soon followed by either accepting Medicare's fee schedule or by devising similar payment methodologies (Mason & Dawson, 1998).

Mason and Dawson (1998) maintain that healthcare's next defining theme centers around three distinct areas: medical management, disease management, and demand management. Performance based measurement, planning, and improvement offers healthcare a viable strategy to meet the challenge of improving healthcare organization performance.

Like the evolution of healthcare themes proposed by Mason and Dawson, the evolution of healthcare performance measurement can be gleaned from the literature. Current trends in performance measurement can be traced back to healthcare's fee-for-service roots.

Prior to widespread government programs like Medicare and Medicaid, "the typical American hospital needed little more than simple bookkeeping. Once a year a decision was made to raise prices" (Beck, 1980, p. 1). Accounting was a necessary evil; it did not contribute directly to the hospital's mission in the minds of many administrators. Needless to say, in the period

from the first Medicare cost report in 1967 to today, the importance and complexity of performance measurement has dramatically increased (Beck, 1980).

As the healthcare industry evolved during the past three decades, measurement efforts paralleled other industries. Commonly used quantitative measures of organizational performance, traditional financial ratios and market standing became important. Ratios such as return on investment, return on equity, profit margin, debt to equity, revenue growth, and asset growth provide quick and easy measures to evaluate and compare organizations. Additionally, overall market share, share of the target market, and market share as a percentage of the market leader illustrate an organization's market position (Duncan, Ginter, and Swayne, 1995, p. 533).

Peter Drucker (in Duncan, Ginter, & Swayne, 1995) takes organizational performance measurement a step further. He indicates that five measures can describe performance: market standing, innovative performance, liquidity and cash flow, profitability, and productivity. It is in the area of productivity that pre-prospective payment (i.e. fee-for-service) healthcare began to develop industry-unique measures.

The fee-for-service healthcare industry measured productivity in terms such as patient admissions, patient visits, and total surgical procedures performed. Higher workload was rewarded with higher reimbursement (Kovner, 1995). Skyrocketing healthcare costs during the 1970s and 1980s were partly attributed to the practice of "more is better," often from both the patients' and physicians' points-of-view (Hodgetts & Cascio, 1983, p. 299; see also Vladeck, 1997, p. 4). Due to its newly designed reporting requirements, Medicare's influence on the market during that period significantly changed performance measurement (Siren & Laffel, 1996).

Large administrative datasets compiled to support Medicare claims processing opened the door for investigators to analyze practice variations and other related phenomena. The availability of claims data and the development of sophisticated computer systems, combined with increasing pressure to contain rising health care expenditures, gave rise to performance measurement as it is known today. Structure, process, and outcome criteria, developed by Avedias Donabedian during this time, can still be found at the heart of current performance measurement systems (Iezzoni, 1997; Siren & Laffel, 1996).

Structural performance measures focus on the context that services are provided. Typical structure measures include board certification of physicians, licensure of facilities, compliance with safety codes, and recordkeeping. "Structure measures generally do not offer adequate specificity to differentiate the capabilities of providers or organizations beyond meeting minimum standards" (Siren & Laffel, 1996, P. 402).

On the other hand, process measures of health care evaluate the way care is provided. Process measures are still retrospective and examine the delivery system versus the product—healthcare services. Examples of common process measures are the number of referrals made out of network, health-screening rates, follow-up rates for abnormal diagnostic results, and clinical algorithms for various conditions. In addition, process of service measures such as appointment waiting times and membership application processing times are frequently used. Process measures may be used to facilitate comparison of similar organizations in an effort to benchmark performance levels (Siren & Laffel, 1996).

Like structure measures, process measures must be linked to clinical outcome. Outcomes measurement, however, has not always been clearly defined. Traditional outcomes measures include infection rates, morbidity, and mortality. The problem with these traditional measures is

that although outcomes measures are purported to reflect the performance of an entire system, they offer little insight into the causes of poor performance (Siren & Laffel, 1996). Although outcomes measures such as nosocomial infection rates, admission rates for select diagnoses, and readmission for the same condition help identify potential areas for improvement, it is important to note that such measures are proxies for clinical outcome measurement at best.

Review of the literature revealed three significant trends in performance measurement as a result of managed care: a shift from price to performance criteria, integration of performance measurement into the accreditation process, and emphasis on long-term prevention and wellness.

Criteria for evaluating managed care plans have shifted from price to performance. Health plans have grabbed all of the "low hanging fruit"—the easy ways to cut costs—like shorter hospital stays. In order to gain new efficiencies, health plans must begin to evaluate the content of care, not merely the cost of care (Ellwood & Lundberg, 1996). Additionally, health plans that historically attracted contracts and members on the basis of cost and coverage are being asked more about the quality of services provided. Increasingly, purchasers are just as attuned to how well a health plan performs as to how much it costs (Marwick, 1997).

Competition based on quality and clinical outcome represents an attractive way to be able to differentiate between market players; however, quality and outcome measurements are not yet fully developed (Vladeck, 1997). Ellwood and Lundberg (1996) stress the difficulty in measuring and reporting quality due to the lack of standard measures. Until quality and outcome measures can be reliably quantified and communicated, competition in these areas may produce undesired results.

Probably the boldest trend in health plan performance measurement is the integration of performance measurement into the accreditation process. Both JCAHO and the National

Committee for Quality Assurance (NCQA) are striving to form the critical link between accreditation and outcomes of care (JCAHO, n.d./1998b; Marwick, 1997). Both organizations envision increased accountability and credibility in the accreditation decision. Specifically, JCAHO's process will:

- (1) increase public and private sector reliance on Joint Commission accreditation, thereby building support for the consensus development and use of standards and performance measures, as well as reducing justification for duplicative evaluation activities;
- (2) provide the Joint Commission with performance data that it can use to monitor organization performance on a continuous basis, help organizations identify issues that require attention, and focus triennial surveys on areas within an organization that represent the greatest potential opportunities for improvement;
- (3) help identify both exemplary performance and best practices to facilitate the provision of benchmarking services to health care organizations; and
- (4) facilitate refinement of the Joint Commission's performance-based standards and the analysis and understanding of the relationship between standards and outcomes.

(JCAHO, n.d./1998b, p. 1)

The final trend in performance measurement is the focus on long-term outcome versus short-term payoff. Bruce Vladeck (1997), Administrator for HCFA, emphasized to the Senate Committee on Finance that "beyond value measured on dollars and cents, managed care plans have the potential to provide value that can be achieved when services are coordinated and when the focus of care is on prevention and wellness" (p. 1). To be effective, health plan performance measurement methodologies must take prevention and wellness into account, especially with Medicare populations.

Considering that nearly 60 percent of healthcare dollars are spent on fewer than five percent of the population (with over half of them being elderly), possible efficiencies gained in the areas of prevention and wellness are enormous (Berk and Monheit, 1992; Feldstein, 1994; Morgan, Finn, Chronister, and Medarametla, 1997, p. 18). Table 2 demonstrates how important medical management of Medicare populations becomes. With inpatient days per thousand five times higher, annual physician contacts two and a half times higher, annual prescriptions filled six times higher, admissions four times higher, and average length of stays nearly double than commercial plans prevention and wellness deserve great attention (McGraw, 1998, p. 2-3).

Review of performance measurement and quality improvement literature revealed two previous studies particularly relevant to the research question. The studies focus on health plan performance measurement within two specific industry segments: a Medicare managed care organization (MCO) and an MTF.

Table 2

Differences Between Commercial and Medicare Population Healthcare Consumption

Consumption Indicator	Commercial (<65 years of age)	Medicare (>65 years of age)
Inpatient Days per 1,000	200	1000-1200
Annual Physician Visits	3.3	8.25
Annual Prescriptions Filled	5.9	35.4
Admissions	50	200
Average Length of Stay	3.7-4.0	7.0

Note. From "Manage Care and Reduce Utilization To Succeed in Medicare," by K. D. McGraw, 1998, The Executive Report on Managed Care, 11(9), 2-4; and C. S. Sampson, Personal Communication, June 16, 1998.

Morgan, Finn, Chronister, and Medarametla (1997) collaborated on a SPRY Foundation examination on the quality of care in HMOs for seniors. The study's purpose was to assess the current state of the art with regard to the measurement of quality, to identify what had been learned from the measurement efforts, and to highlight gaps in the current measurement efforts (p. 1). The study was composed of an in depth literature review followed by 61 interviews. Individuals interviewed represented consumer, HMO, private foundation, think tank, professional/trade organization, and purchaser/payor perspectives.

The authors contend that total value of a product is made up of three elements: price, service, and quality. Quality is by far the most complex and difficult to measure. In terms of Donabedian's three criteria for quality assessment, structure and process criteria are readily measurable; outcome remains elusive (Siren & Laffel, 1996). Vladeck (1997) echoed their finding by stating that "the science of outcomes measures is in its infancy. The movement towards better outcomes measures is critical for HCFA, like-minded purchasers, and beneficiaries in order to hold plans and providers accountable for the care they deliver" (p. 4). Morgan, Finn, Chronister, and Medarametla (1997) conclude that comparable data do not exist to adequately understand many processes and outcome measures (p. 6).

The Morgan, Finn, Chronister, and Medarametla (1997) study, *Quality of Care in HMOs for Mature Adults*, identifies HCFA's quality of care measurement instruments. These instruments comprise one facet of HCFA's ambitious program to respond to public concerns regarding quality of care provided in HMOs. HCFA relies on NCQA's Health Plan Employer Data and Information Set, version 3.0 (HEDIS 3.0) for performance measures, the HEDIS 3.0 Health of Seniors questionnaire (SF-36) for outcome measures, the Medicare version of the Consumer Assessments of Health Plans Study (CAHPS) for beneficiary satisfaction, and a set of

clinical outcomes measures developed by the Foundation for Accountability (FACct). The study identified numerous concerns regarding quality measurement activities for HMOs serving mature adults:

- (a) raising expectations unreasonably high about the effectiveness of quality measurement to improve quality of care in the short term;
- (b) ensuring that the quality measures are responsive to consumer information needs;
- (c) ensuring database accuracy from which to develop criteria to measure quality;
- (d) filling in the gaps in quality measurement; and
- (e) translating the data into useful information for consumers, purchasers/payers, and MCOs. (Morgan, Finn, Chronister, and Medarametla, 1997, p. 11)

Although the authors admit that significant progress has been made in the field of quality measurement, their key conclusions identify many shortcomings about quality of care measurement. Their findings are: (a) quality measurement is in its infancy, (b) there is a glaring need for research on quality indicators for seniors, (c) data collection is a massive undertaking, (d) enhanced training is needed at all levels of the healthcare industry, and (e) communicating information remains a challenge (Morgan, Finn, Chronister, and Medarametla, 1997).

In contrast to quality measurement assessment in civilian MCOs, Hart and Connors (1996) examine the use of performance improvement planning within the context of an MTF. Their study proposes a resourcing decision model for military hospitals that incorporates many of the same elements Morgan, Finn, Chronister, and Medarametla examined.

One significant difference is that the Hart and Connors study deals with military budgets. The MTF commander, equivalent to a civilian chief executive officer, is constrained in the budget arena by short-term, fixed budgets and lacks strategic support for long-term forecasting.

Next year's MTF budget is tied directly to the DHP appropriation approved by congress and is, therefore, subject to significant fluctuation. The concept of an MTF commander "going in the red," accepting a short-term loss for a long-term profit, has not been a realistic option. As the DoD enters the competitive arena of Medicare subvention, the willingness and ability to take risk will become necessary (Hart and Connors, 1996, p. 2).

Information is central to the ability to make informed business decisions. The requirement for performance measurement systems, fed with valid data, is a recurring theme—military or civilian. "The DoD is working to standardize performance indicator development and cost-analysis systems across the Army, Navy, and Air Force so that relevant cost and workload comparisons can be made" (Hart & Connors, 1996, p. 2). That standard is CEIS and it is being deployed across the DoD as the official decision support/executive information support system (CEIS (EA), 1998; Hart & Connors, 1996).

Hart and Connors' (1996) conclusions dovetail with those of Morgan, Finn, Chronister, and Medarametla. Successful development and implementation of a measurement system requires an understanding of all of its components and the right type of inputs: cost requires valid data, processes must be well defined, and outcomes must be quantified (p. 8). Both studies emphasize the importance of well-defined performance measurement programs.

Several recurring performance measurement themes are apparent in current literature. Other investigators have examined performance and quality measurement opportunities through related approaches such as provider and health plan report cards, large administrative databases, process-based measurement, and clinical and outcome measures. Each approach shares common threads with the two aforementioned studies.

As the concept of performance reporting on quality has developed, "report cards" or "balanced scorecards" refer to standardized, public reports on health plan performance (Epstein, 1995). While report cards vary in format and content, their basic purpose is to provide customers, purchasers and consumers (all external to the healthcare organization), with key, comparable health plan information in an environment where healthcare organizations are competing for market share (Epstein, 1995; Health Care Advisory Board [HCAB], 1997b; Siren & Laffel, 1996; Slovensky, Fottler, & Houser, 1998). Report card initiatives are as varied as the health plans they measure.

Rhinehart (in HCAB, 1998) maintains that the health care industry tracks quality in three dimensions: clinical quality, customer satisfaction, and service quality (p.1). Typical report card programs include clinical outcomes, cost, functional status, and satisfaction tracking and analysis (HCAB, 1997b, p. 2; Slovensky, Fottler, & Houser, 1998, p. 16). Data elements included in report cards are selected according to the anticipated audience (Slovensky, Fottler, & Houser, 1998). For example, many hospital-based report cards intended for the community further divide quality indicators to measure access to care, clinical outcomes, community needs fulfillment, financial indicators, number of patients served, and patient satisfaction. The clinical data included in these reports are intended to measure the quality of care; however, these measures tend to focus on health plan administrative processes and preventative treatments such as mammographic screening and immunization rates rather than on outcomes data (Epstein, 1995; HCAB, 1998).

Slovensky, Fottler, and Houser (1998) recently reviewed report card development and implementation. Their research places report card initiatives into five categories: (a) those mandated by state agencies, (b) those developed by health plans, (c) those requested by

purchaser coalitions, (d) those resulting from collaborative efforts of not-for-profit organizations, and (e) those produced by voluntary provider alliances. Prime examples of report card initiatives are DoD's Quality Management Report (QMR) and NCQA's Quality Compass program.

The QMR was one of the first formalized MHS system-wide performance reports. The report provided a forum in which to highlight significant quality improvement activities and accreditation efforts. A "dashboard" of quality performance indicators addressing hospital accreditation status, practitioner licensure status, physician board certification, beneficiary satisfaction, inpatient utilization rates, and preventable admissions [more accurately indicators of preventable admissions such as asthma hospitalization rates] formed the heart of the report (ODSD (HA), 1997a, 1997b).

Quality Compass collects information on 100 performance measures, many of which come from HEDIS. HEDIS collects information on 75 standardized performance measures to compare over 300 managed health care plans (NCQA, 1997b, 1997c; Spoeri & Ullman, 1997). A second, closely related example is the JCAHO sponsored Quality Check program. JCAHO (1997) promises that "Quality Check will provide you with information that lets you know where your health care organization stands when it comes to the quality of care it provides" (p. 1). Primarily, both programs (as well as HEDIS) examine administrative processes as proxies for clinical outcome—measures useful to external customers versus health plan managers.

As seen in the NCQA example, many report cards are derived from administrative data, data resulting from the administration of healthcare delivery—enrolling members into insurance plans and processing claims for services provided (Iezzoni, 1997). Medicare's large administrative databases, coupled with emerging computer technologies, facilitated early performance measurement in the 1960's and 1970's. For the first time, investigators had access

to significant sets of data and were able to employ powerful epidemiological methods in their analyses of healthcare delivery (Siren & Laffel, 1996). Although administrative data were never intended for use in quality assessment, their usefulness as screening tools is apparent in both process and structure measures (Iezzoni, 1997). Outcome measures with administrative data are, however, another story.

Administrative data offer investigators several attractive features: they are readily available, inexpensive to acquire, computer readable, and easily compared across populations. Outcomes measurement, however, requires detailed clinical information that is generally buried deep within paper medical records. The costs of acquiring and maintaining clinical data is, therefore, significantly higher (Iezzoni, 1997). "Widespread quality assessment [outcomes measurement] demands a tradeoff: the credibility of clinical data versus the expense and feasibility of data collection" (Iezzoni, 1997, p. 2).

Since detailed clinical information is typically not found in large, automated databases, careful use of existing process measures along with developing electronic medical records may serve as a bridge between current measurement methodologies and the "utopia" of clinical outcomes measurement (Nerenz, 1997). Palmer (1997) offers such an alternative to pure outcomes measurement—process-based measures of quality (p. 1). Unlike report card initiatives, process-based outcome measurements provide health plan executives with critical information needed for plan management.

Process-based measures attempt to quantify how well specific processes along the care continuum are executed. The processes measured are those that experts agree can be scientifically shown to improve clinical outcome. The level of scientific evidence required for publicly released measures of quality should be particularly high. Process-based measures of

health care quality can be constructed by combining evidence from multiple studies in order to compile evidence-based guidelines on clinical practices (Epstein, 1995; Palmer, 1997, p.2).

These clinical practices outline analytically the specific procedures to be followed for suspected diagnoses or primary complaints. Historically, such guidelines, or clinical protocols, have been used as the basis for modeling and computerized teaching (Williams & Torrens, 1993). In addition to the creation of guidelines, criteria for quality are also formulated to identify candidate patients. Conceptually, the number of patients identified to receive the guideline-related care is divided by the total number of patients who were eligible to receive the care (or those who should have received the care). Although moving such measurement initiatives from theoretical to operational environments is confounded by information systems' inability to collect (or project) the denominator, the basic construct can lead managers closer toward outcomes measurement. The concept behind guideline-related care is intended to result in rates that may be used to describe how well the healthcare system "worked" in relation to how well it should have worked (Palmer, 1997).

Obviously, no system can be expected to correctly predict how each case should be treated. Sources of variation include patient and provider preference, compliance with provider recommendations, and patients don't always fit neatly into guidelines. Process-based measurement also suffers from the same handicap that clinical outcomes measurement does: the difficulty in collecting detailed clinical data (Palmer, 1997).

Fortunately, large-scale process-based measurement is becoming more feasible. Advances in technology are allowing easier integration of clinical medical information systems. Merging inpatient and outpatient information with laboratory and pharmacy databases is an important step in ultimately linking all patient information (Palmer, 1997).

The majority of the literature reviewed concentrated on commercial health plan performance measurement. Little work has been published specifically on performance measurement of Medicare health plans, plans that serve an especially vulnerable population. Lavizzo-Mourey and Mackenzie (1996) explore managed care's potential effects on minority populations and postulate that, while managing healthcare utilization and narrowing consumer choice can be effective cost-saving strategies, they also present a potential threat to quality of care for these groups in particular. They approach the subject of performance measurement from a slightly different view—"cultural competence."

As we approach the year 2000, roughly 25 percent of the U.S. population will be members of "minority" groups. Since minority groups are not monolithic, the considerable diversity that exists within U.S. subpopulations must be factored into the guidelines of quality. On this basis, Lavizzo-Mourey and Mackenzie (1996) conceptualize cultural competence as the awareness and integration of three population-specific issues: health-related beliefs and cultural values, disease incidence and prevalence, and treatment efficacy (p. 1).

Daniel (1996) may have unknowingly touched on this important issue when he observed that "given the right demographics, location, utilization, and cost efficiency, hospital[s] and health systems will recognize financial and operational gains by transitioning themselves from the passive recipient to the active administrator of the Medicare dollar" (p. 407). Managed care performance measurement must be flexible enough to account for not only demographic but also cultural difference, especially when entering new markets with new products.

As physicians establish guidelines for quality of care that support the changing managed care environment, they must address two important trends. First, managed care was formerly confined to a predominately middle class population whereas it now extends to diverse and more

vulnerable groups including Medicare and Medicaid. Additionally, a managed care environment focuses on covered lives—the individual patient must not be lost in the shuffle (Lavizzo-Mourey and Mackenzie, 1997, p. 1).

Like Lavizzo-Mourey and Mackenzie, McHorney (1997) illustrates a potential performance measurement pitfall. McHorney's basic question is why use generic surveys with "non-generic" populations?

Researchers have designed numerous tools that rely on self-reporting to measure everything from functional status to customer satisfaction. Managed care movements, such as outcomes measurement, have dramatically increased the use of generic surveys. McHorney (1997) proposes the use of emergent technology to improve the feasibility and utility of including patient-centered data in large administrative databases (p. 1).

Generic health status assessments were developed in the group-testing tradition. Features of such tools include a fixed set of items for all respondents, items written to represent the "norm," and as few items as possible. In addition, acceptable standards of validity and reliability of tools with few items is best achieved by selecting items that are fairly homogeneous. Two consequences result: fixed-length surveys either bore healthy respondents or frustrate more impaired respondents. Since item selection is geared toward middle-of-the-road, the end points of the health continuum are poorly defined with such instruments (Cooper & Emory, 1995; McHorney, 1997, p. 4). McHorney's answer to this phenomenon is equiprecise measurement for generic health concepts.

Equiprecise tests yield measures of equal precision at all levels—equal precision for the sickest and healthiest. This type of measurement is possible through the conjoint use of computerized adaptive testing and the measurement theory known as "item response theory"

(McHorney, 1997, p. 5). Patient survey information, to include elusive elements such as behavioral and emotional function data, can be tailored to the individual and can be collected for inclusion into outcomes databases, often in half the time as standard pencil-and-paper surveys. The power of computerized adaptive testing has been demonstrated with knowledge-based testing, such as the Graduate Management Admission Test. Testing computer software selects future questions based on answers already provided. Items that either do not apply or have already been covered adequately are not offered to the person being surveyed. Therefore, such tests can reduce testing time by 50 to 75 percent and are capable of providing rapid scoring and feedback (McHorney, 1997). The inclusion of equiprecise measurement of health concepts in a Medicare managed care setting has the potential to make significant contribution.

The promise computerized equiprecise measurement offers is also tempered by the fact that the measurement is computer-based. The issues of computer equipment availability and many seniors' unfamiliarity with computer technology must be addressed to prevent failure. Although adaptation of equiprecise measurement to a paper-based format loses the efficiency of automation, the near-term utility of such a tool is an attractive alternative to traditional surveys.

Eight key measurement projects relevant to the research question were identified: four civilian performance measurement projects, two performance indicator research studies, and two MHS performance measurement programs.

The "flag ship" performance measurement initiative, the Quality Indicator (QI) Project (more commonly known as "Maryland Indicators"), got its start in 1985 as a pilot project of seven Maryland hospitals. The ultimate goal of the QI Project was to serve as a tool for overseeing the quality of care and for identifying opportunities for improvement. The clinical

orientation of the QI Project is apparent in the 15 inpatient and ambulatory outcomes-based indicators included in the primary data set. Additional indicators being examined include psychiatric, pediatric, long-term care, and process indicators (Maryland Hospital Association (MHA), 1998a).

Although the QI Project is not “intended to be used to establish performance thresholds or standards of care” (MHA, 1998a, p. 1.), its impact on subsequent performance measurement initiatives can be seen in one of the most current programs: Oryx. Oryx is JCAHO’s latest plan to base healthcare organization accreditation, in part, on provider performance. Eleven of the original 15 QI Project indicators, as well as several of the psychiatric and long-term care indicators, are mirrored on the Oryx approved measures list (HCAB, 1997c; MHA, 1998b; and Moore, 1997).

One of the first comprehensive performance measurement initiatives to illustrate the need to objectively gauge health delivery system performance was the Consortium for Research on Indicators of System Performance (CRISP). Henry Ford Health System’s Chief Executive Officer, Gail Warden, launched the CRISP project in 1991, by posing the question: “How do we know if our system is doing a good job” (Nerenz, Zajac, and Rosman, 1993, p. 577)?

The recognition that large, integrated health systems were becoming increasingly numerous, and that such systems needed to be able to measure overall performance in support of public accountability, resulted in an initial conceptual framework of 91 quantitative performance indicators (Nerenz, Zajac, and Rosman, 1993). Although CRISP is no longer an active research project (as of May 1998), the Consortium served as the catalyst for dozens of initiatives to follow. Its current direction has shifted from inter-health system measurement and comparison to

intra-health system outcomes measurement research (L. Pietrantoni, personal communication, May 22, 1998).

Although touted as the most well known and most widely used health plan performance measurement tool in the industry, HEDIS actually serves purchasers of health care services more than the managers of those services. The current version, HEDIS 3.0, was designed to help consumers evaluate the quality of managed care plans by providing standardized performance measures focusing on outcomes. HEDIS compares the performance of more than 330 MCOs across the nation in eight areas of performance ranging from access and quality of care to health plan stability (NCQA, 1997a, 1997c; Werner, 1996).

While designed for the healthcare consumer, HEDIS is widely used by MCOs because of the measures' "track history... and statistical properties" (NCQA, 1997a, p. 2) needed to benchmark performance. HEDIS has established itself in the industry and will continue to serve as a foundation for future performance measurement initiatives. The next version of HEDIS, currently referred to as HEDIS 1999, is due to be released in the summer of 1998. The proposed changes fill gaps previously identified in version 3.0 (NCQA, 1998).

The only proprietary performance measurement system included in this study is the Comprehensive Healthcare Analysis and Management Program (CHAMP) from William M. Mercer, Incorporated. One of countless commercially available systems, CHAMP represents the operational end of the performance measurement system continuum. CHAMP, designed primarily as a health plan financial decision support system, provides performance indicators at the health plan operations level. The program supports plan management in the areas of benefit design, utilization management, and provider price contracts (Mercer, 1997).

Two HCAB custom research projects, Internal Performance Indicators and Hospital-Wide Quality Data Indicators provide insight to the content and organization of hospital-based performance indicators. Although specific indicator specifications are not provided, the studies illustrate how performance indicators generally fall within the broad categories of community service, financial performance, quality statistics, and general customer-related indicators (HCAB, 1995, 1996a).

The two military-specific performance measurement initiatives identified represent the state-of-the art for the MHS: the MHS Performance Report Card (MHS PRC), and the Air Force Medical Service (AFMS) Performance Measurement Tool (PMT).

In late 1995, senior staff members of OSD (HA) formulated an initial series of performance measures in support of the MHS strategic plan. The purpose of these metrics was to provide healthcare managers at the DoD corporate level with a measurement tool that would help them evaluate the effectiveness of the MHS as the DoD migrated into a managed care environment. The MHS PRC was later developed to allow the resulting measures to be examined at the MTF level by all managers, particularly those at the point of healthcare delivery (Health Services Analysis and Measurement (HSAM), 1997).

The AFMS PMT was developed in response to the recognized lack of any standardized performance measurements and the incentives to achieve them within the AFMS (AFMS, 1998). The Air Force Medical Systems roundtable concluded in early 1997, "these deficiencies create significant barriers to improving AFMS quality, service, and cost efficiency" (AFMS, 1998). Further, "the creation of an AFMS PMT that uses standardized metrics and automates data collection (particularly for the AFMS as an accountable health care plan with an enrolled population) would be a crucial first step in meeting [AFMS] goals" (AFMS, 1998).

Although each performance measurement initiative evaluated was designed for distinct purposes, all share the same overall goal: to link performance measurements with organizational missions and visions.

Method and Procedures

To adequately address the research question, “are current MHS performance measurement systems adequate to evaluate Medicare Subvention Demonstration success?” the following objectives were explored:

- (a) What data elements are readily available in MHS systems and how do they compare with industry standards?
- (b) What data set is required for adequate performance measurement and comparison?
- (c) Do current MHS performance measurement systems capture the data required to measure and relate health plan performance?

This is a Level 1, descriptive study. A qualitative methodology—a detailed investigation of existing performance measurement systems—was determined to be the most appropriate approach because the lack of MHS Medicare HMO experience precluded the formulation of a theoretically derived hypothesis. The sampling strategy chosen includes elements of both convenience (unrestricted, nonprobability) and snowball (restricted, nonprobability) techniques due to the largely exploratory nature of the research question.

Existing performance measurement schemes found within civilian and military healthcare organizations form the initial sampling frame. Initial study cases were identified through two convenience methods: literature review via multiple Internet search engines, and interviews with healthcare executives in the St. Louis, MO area. The following Internet search engines and World-Wide-Web (WWW) sites were used:

- (a) HealthGate: <http://www.healthgate.com/>
- (b) MedConnect: <http://www.infotrieve.com/medconnect/>
- (c) Dogpile: <http://www.dogpile.com/>
- (d) The Advisory Board Company: <http://www.advisory-hcab.com/cgi-bin/hcab.cmd/>
- (e) DoD Health Affairs: <http://www.osd.ha.mil/>
- (f) ACP Online: <http://www.acponline.org/>
- (g) NCQA: <http://www.ncqa.org/>
- (h) JCAHO: <http://www.jcaho.org/>
- (i) HCFA: <http://www.hcfa.gov/>

Internet search engines and WWW site search utilities were used to retrieve documents and world-wide-web sites that responded to the following target terms:

- (a) health plan performance
- (b) health plan
- (c) performance measurement
- (d) performance indicators
- (e) quality management
- (f) continuous quality improvement
- (g) quality indicators
- (h) report cards
- (i) balanced scorecards
- (j) HEDIS

Final study cases were identified through snowball sampling (Cooper & Emory, 1995, p. 230) of the initial group. For journals and WWW documents, a reverse search for

bibliographic sources was conducted to identify additional study cases. Journal selection criterion was restricted to the initial search topic list and dated December 1993 or later.

In addition to an extensive literature review, a series of interviews were conducted. The majority of the interviewees were selected from the St Louis market because of easy access, convenient location, and diverse perspectives (See Table 3). Data elements (individual performance indicators) extracted from the various health plan performance measurement schemes comprise the final study sample.

MHS and civilian performance measurement systems were compared and contrasted in an effort to determine the optimal set of data elements required for Medicare health plan performance measurement. Data elements were compiled from the following sources:

(a) primary and secondary literature reviews; (b) interviews with civilian health plan executives (Renaissance Health Plan, Partners Health Plan of the Midwest, Care Partners Health Plan, and Health Management Partners); and (c) site visits at Scott AFB, IL and Keesler AFB, MS.

Performance indicators present in MHS systems were identified and compared to those elements representing industry norms from civilian systems.

Primary initiatives compared include: (a) the Air Force Medical Service (AFMS) Performance Measurement Tool (PMT), (b) the MHS Performance Report Card (PRC), (c) the Consortium Research on Indicators of System Performance (CRISP), (d) the Comprehensive Healthcare Analysis and Management Program (CHAMP), (e) the Health Plan Employer Data and Information Set (HEDIS), and (f) two related research projects from the Health Care Advisory Board (HCAB). Performance indicator specifications for each model are at Appendices C through I respectively.

Table 3

Individuals and Organizations Interviewed

Name	Title(s)
Lt Col Tom Ardoline	Commander, TRICARE Flight, Keesler Medical Center, Keesler AFB, MS
Dr. Joseph Avelone	President, Renaissance Health Plans, MA
Mr. Francis Brissette	VP Finance, Renaissance Health Plans, MA
Mr. Emmette Craft	Director, Managed Care Contracting, BJC Health System, St Louis, MO
Mrs. Sandy Graff	Director, Medical Management, Health Management Partners. LLC, St Louis, MO
Lt Col Bernie Kerr	Director, Technology Insertion & Benefits Realization, Scott AFB, IL
Dr. John Lynch	Medical Director, Health Management Partners, LLC, St Louis, MO
Mr. Dennis Mathis	President, Health Partners of the Midwest
Maj Tim McCormick	Commander, TRICARE Flight, 375th Medical Group, Scott AFB, IL
Ms. Lisa Pietrantoni	Center for Health System Studies, Henry Ford Health System
Mr. Charles Sampson	VP, Managed Care, BJC Health System; President, Care Partners HMO; and President, BJC Dental Plan, St Louis, MO
Dr. Deb Zimmerman	Medical Director, Health Partners of the Midwest, St Louis, MO

A Microsoft Access database consisting of individual performance indicators from each of the initiatives was compiled. Each indicator-initiative combination, representing a unique database record, was subjectively coded classifying it as either a military or civilian initiative and as being a structure, process, or outcome criteria measure. Indicators were also coded as one of 12 general measurement categories: financial performance, customer satisfaction, quality (to include preventive, clinical outcome, disease management, and access to care), community service, utilization, enrollment, population, and other.

A recognized limitation in the coding convention is that indicators were coded as falling exclusively into one measurement criteria and one performance indicator category: few indicators belong in only one category.

A variety of Microsoft Excel logical and reference table commands were used to convert file entries to a Statistical Package for Social Sciences (SPSS), version 7.0, compatible format. Reliability of data transfer was confirmed by comparing categorical frequencies from the original Access file and the resulting SPSS file—resulting in a 100 percent accuracy of data transfer. Data labels, values, and codes may be found in the Data Codebook at Appendix J.

The evaluation scheme for the study is comprised of three steps directly related to the three objectives. The first evaluation point (a) determines what data elements are readily available in MHS systems and how they compare with industry standards. Objective and evaluation point (b) results in a model health plan performance measurement system as a result of the “best practice” review and an informal consensus of interviewed healthcare executives. Finally, (c) the degree which MHS performance measurement systems compare to the proposed “best case” model will be reported.

Reliability of the study is demonstrated by the extent of agreement between the various literature and interview sources used to compile the best case model. Agreement on critical performance measurement data elements and performance indicators among a variety of case studies and health plans build support for acceptable reliability of the proposed model. Validity, however, will be more difficult to substantiate.

Since the model proposed will be developed from multiple, varied input from previous research, case studies, and operational health plans, external validity will be high. Study recommendations may be successfully generalized within military or civilian healthcare

organizations seeking to monitor Medicare health plan performance. Extracting enough detail from successful health plans and performance measurement systems to form a complete and representative collection of data elements governs content validity. Content validity will be dependent largely on the completeness of the literature review; however, it is important to note that the exploratory nature of the study does not represent an exhaustive review. Consensus among interview sources that the data set compiled is complete supports overall study validity.

Results

The study sample consists of 318 records (N=318) compiled from the examination of six performance measurement initiatives: two MHS performance measurement programs, three civilian performance measurement projects, and two performance indicator research studies (treated as one initiative). Although each record is a unique combination of performance initiative and indicator, duplication of indicator function between initiatives reduces the number of unique performance indicators to approximately 180. Furthermore, as demonstrated in Table 4, individual performance indicators can be subjectively grouped into 28 general areas based on indicator descriptions from each initiative investigated. The most common indicator categories are Financial Performance (6 of 7 measurement schemes), Customer Satisfaction (5 of 7), Quality of Care (4 of 7), Community Service (3 of 7), and Utilization (3 of 7).

Within the 318 indicators, 83.3 percent represent process measures, 11.9 percent represent outcome measures, and the remaining 4.7 percent are structure measures. The distribution of indicators employed by each performance measurement scheme is provided in Table 5 by indicator criteria and by indicator category.

Table 4

Matrix of General Areas Covered by Select Performance Measurement Schemes

CRISP	HCAB	HCAB	CHAMP	HEDIS 3.0	AFMS PMT	MHS PRC
				Access/ Avail of Care		Access to Appts and to Care
		Appropriateness Indicators				
			Benefit Modeling			
			Clinical Profiles			
Community Benefit	Community Service	Community Benefit				
		Comorbidities				
Satisfaction	Customer Related	Customer Satisfaction		Satisfaction with Care Experience	Customer Satisfaction	
				Effectiveness of Care		
Efficiency		Efficiency Indicators				
			Enrollment Analysis			
Episode Prevention						Health Behavior
Episode Characteristic						
			Expense and Utilization			
Financial Performance	Financial Performance	Financial Indicators	Financial Management	Cost of Care	Financial Performance	
				Health Plan Descriptive Info		
				Informed Health Care Choices		
			Large-Case Management			
		Maternal/Child Care Indicators				
		Nursing Staffing Indicators				
		Outcome Indicators			Technical Outcomes	
			Plan Performance	Stability of Health Plan		
Population Health						Health Status
			Provider Analysis			
		Prevention Indicators				
Quality of Care	Quality Statistics	Quality Indicators				Quality
		Risk Indicators				
		Severity Indicators				
				Use of Services		Utilization

The data elements that are readily available in MHS systems are detailed in Appendix C and D. Data elements representing civilian industry standards are detailed in Appendices E through I. Comparison of individual elements (indicators) proved problematic due to wide variability in indicator construction; however, comparisons of the indicators by criteria and by category are provided (Table 5). Comparison of the total group, military only, civilian only, and civilian minus HCAB indicator subsets at Table 6 demonstrate general agreement in the composition of military and civilian performance measurement systems in terms of the general areas measured.

The fourth indicator set in Table 6, civilian minus HCAB, is provided as an alternate comparison group. Unlike the five other performance measurement initiatives, the HCAB studies represent secondary research and lack original, detailed performance indicator specifications. Additionally, the HCAB studies concentrate on inpatient hospital rather than health plan performance assessment. Although useful in determining the framework of general performance measurement systems, exclusion of these indicators provides a closer comparison of operational health plan performance measurement systems.

The relative small sample size ($n < 500$) made one-sample hypothesis testing of percentages impractical (Sanders, 1995, p. 307); however, cursory examination of the results (Table 6) illustrates agreement between the military and civilian measurement schemes in terms of the general organization of measurement areas. Each measurement scheme uses a variety of performance indicators within similar evaluation areas to assess organizational performance.

Table 5

Distribution of Indicators Employed by Select Performance Measurement Schemes (N=318)

INDICATOR CHARACTERISTIC	CIVILIAN				MILITARY	
	CRISP	HCAB	CHAMP	HEDIS	AFMS PMT	MHS PRC
	% (n=18)	% (n=165)	% (n=24)	% (n=60)	% (n=27)	% (n=24)
INDICATOR CRITERIA						
Process	77.8	80.0	91.7	90.0	85.2	83.3
Outcome	22.2	17.6	8.3	5.0	0.0	0.0
Structure	0.0	2.4	0.0	5.0	14.8	16.7
INDICATOR CATEGORY						
Financial Performance	16.7	29.7	54.2	5.0	14.8	0.0
Customer Satisfaction	5.6	9.7	0.0	3.3	25.9	12.5
Quality	55.6	21.7	25.0	46.7	44.4	62.5
Quality—General	16.7	3.0	4.2	6.7	3.7	12.5
Quality—Preventive	11.1	4.8	8.3	16.7	33.3	50.0
Quality—Outcome	27.8	13.9	8.3	3.3	0.0	0.0
Quality—Disease Mgt	0.0	0.0	4.2	8.3	7.4	0.0
Quality—Access to Care	0.0	0.0	0.0	11.7	0.0	0.0
Community Service	5.6	2.4	0.0	0.0	0.0	0.0
Utilization	16.7	19.4	8.3	28.3	0.0	16.7
Enrollment	0.0	3.6	8.3	6.7	7.4	4.2
Population	0.0	3.6	4.2	5.0	3.7	0.0
Other	0.0	9.7	0.0	5.0	3.7	4.2

Table 6

Summary of Health Plan Performance Measurement Data Elements from MHS and Civilian Measurement Schemes

INDICATOR CHARACTERISTIC	Total Initiatives % (N=318)	Military Initiatives % (n=51)	Civilian Initiatives % (n=267)	Civilian-HCAB Initiatives ¹ % (n=102)
INDICATOR CRITERIA				
Process	83.3	84.3	83.1	88.2
Outcome	11.9	0.0	14.2	8.8
Structure	4.7	15.7	2.6	2.9
INDICATOR CATEGORY				
Financial Performance	22.6	7.8	25.5	18.6
Customer Satisfaction	9.1	19.6	7.1	2.9
Quality	33.1	52.9	29.9	43.1
Quality—General	5.3	7.8	4.9	7.8
Quality—Preventive	13.5	41.2	8.2	13.7
Quality—Outcome	10.1	0.0	12.0	8.8
Quality—Disease Mgt	2.5	3.9	2.2	5.9
Quality—Access to Care	2.2	0.0	2.6	6.9
Community Service	1.6	0.0	1.9	1.0
Utilization	18.2	7.8	20.2	21.6
Enrollment	4.7	5.9	4.5	5.9
Population	3.5	2.0	3.7	3.9
Other	6.6	3.9	7.1	2.9

¹ Note. Frequencies are provided for civilian initiatives without the Health Care Advisory Board figures for additional comparison due to the lack of indicator specifications in the studies.

At first glance, significant differences exist in the weight applied to measurement categories as well as the distribution of structure, process, and outcomes criteria within those categories. However, categorization of individual performance indicators, as described in methods, contributes to much of the apparent difference between measurement schemes. Although indicators were exclusively placed in one of twelve categories, many indicators could easily have fit in multiple categories. Additionally, dividing lines between structure, process, and outcomes measures are not well defined.

Apparent differences among individual schemes (Table 5) can also be attributed to the initiatives' purpose and the environment in which they were designed. While process measures account for the majority of indicators across all initiatives, the ratio of outcome and structure measurement criteria varies considerably. MHS initiatives rely more heavily on compliance-type criteria indicative of structure measures. These measures are reflective of a management environment governed primarily by mission completion versus financial incentive.

Conversely, outcomes-related measures (mostly in the form of frequencies for select diagnoses and common hospital-based measures for length of stay and inpatient admissions) are more common in the civilian initiatives. These measures reflect civilian healthcare organizations' history of managing operations and costs largely through utilization control.

While all six initiatives emphasize measurement in the quality domain, significant differences in the categories of financial performance and customer satisfaction were observed.

Specifically, HEDIS and the MHS PRC have few financial measures. HEDIS is intended for external customer use versus internal management use; therefore, few financial details are tracked and reported. Similarly, the MHS PRC takes a DoD system-wide view and measures are designed to communicate macro-level performance. On the other hand, both CHAMP and

HCAB place significance emphasis on financial measures. Since these initiatives were specifically designed to identify and report high-costs procedures, diagnoses, and providers, greater emphasis on financial measurement is expected.

Variance in the area of customer satisfaction also appears significant. Both military initiatives contain from two to five times as many customer satisfaction indicators as the major civilian initiatives; however, upon closer examination, specific indicator construction accounts for much of the difference. The AFMS PMT, for example, combines general customer satisfaction as well as access to care in this category. The main difference is how the measure is defined: subjectively (customer satisfaction) or objectively (quality—access to care).

A similar situation is apparent within the preventive and utilization categories. MHS measurement schemes tend to incorporate utilization measures within preventive indicators, reflecting more proactive monitoring of preventive quality measures and less emphasis on reporting traditional utilization data.

Health plan executives interviewed subjectively judged the adequacy of performance indicator sets (Appendices C through I) as adequate. Of the five specific performance measurement methodologies examined, two support report card-like measurement (HEDIS and MHS PRC), two provide management-grade health plan information (CRISP and AFMS PMT), and one facilitates detailed financial performance management (CHAMP).

Interviewees identified the following Medicare-specific indicators as areas not adequately addressed: (a) complaint/grievance trends, (b) prescription drug profile management, (c) initial physical exam completion/health risk appraisal, (d) early high-risk identification protocols, (e) detailed population risk comparisons, and (f) case/disease management program efficacy.

Although each methodology included in the study demonstrates areas of excellence, none were found to be one-size-fits-all measurement systems, particularly in the context of Medicare health plan operations. Each initiative was designed for a specific environment and a specific purpose. The AFMS PMT is the nearest thing to an existing, self-contained MHS measurement tool capable of monitoring Medicare subvention health plan performance. Of the civilian systems studied, the combination of CRISP and HEDIS provide the best opportunity for health plan performance information gathering. Comparison of the AFMS PMT with CRISP/HEDIS combination is presented in Table 7.

Primary differences are observed in the areas of customer satisfaction, prevention, and utilization; however, in combination the three initiatives complement each other. Weaknesses in one scheme are generally offset by strengths in another.

Table 7

Comparison of Health Plan Performance Measurement Data Elements from AFMS PMT and CRISP/HEDIS Measurement Systems

INDICATOR CHARACTERISTIC	CRISP/HEDIS % (n=78)	AFMS PMT % (n=27)	Δ %
INDICATOR CRITERIA			
Process	87.2	85.2	2.0
Outcome	9.0	0.0	9.0
Structure	3.8	14.8	11.0
INDICATOR CATEGORY			
Financial Performance	7.7	14.8	7.1
Customer Satisfaction	3.8	25.9	22.1
Quality	48.8	44.4	4.4
Quality—General	9.0	3.7	5.3
Quality—Preventive	15.4	33.3	17.9
Quality—Outcome	9.0	0.0	9.0
Quality—Disease Mgt	6.4	7.4	1.0
Quality—Access to Care	9.0	0.0	9.0
Community Service	1.3	0.0	1.3
Utilization	25.6	0.0	25.6
Enrollment	5.1	7.4	2.3
Population	3.8	3.7	0.1
Other	3.8	3.7	0.1

Discussion

The three primary performance measurement methodologies considered (AMFS PMT, CRISP, and HEDIS) were developed with different purposes and perspectives. The uniqueness of an MHS Medicare Subvention Project environment makes it unlikely that any one of these initiatives would be sufficient in subvention performance measurement. However, the combination of the three models holds promise as a model performance measurement system.

The AFMS PMT examines 27 performance indicators in three categories: technical outcomes, customer satisfaction, and financial performance (detailed at Appendix C). The AFMS views the PMT as “a critically important first step” (Foster, 1997, p. 10). The tool identifies standardized metrics, specifies the methodology, provides the AFMS with an opportunity to learn the principles and practices of integrating existing systems and processes to improve the quality of care. “The desired end state is an accountable health plan with data-driven quality improvement ‘built-in,’ not ‘added on’” (AFMS, 1998, p. 3.).

CRISP began with 91 proposed performance indicators. The actual list of indicators used in the project was first reduced to 33, based on the availability of individual data elements, then to 18, as a result of prioritization by participating health systems (Nerenz, Zajac, and Rosman, 1993). A description of the CRISP performance indicators is at Appendix E. CRISP is unique in that it focuses on performance measures across integrated healthcare delivery systems rather than within individual delivery systems. It approaches this primarily by looking for ways to measure episodes of care that cross traditional organizational boundaries and to evaluate the effect (outcomes) systems have on specific populations.

According to CRISP, indicators that show promise in quantifying clinical outcomes include population health, quality of care, episode characteristics, episode prevention, efficiency,

and satisfaction (Bergman, 1994). Care must be taken that purported outcomes measures are indeed feasible as well as meaningful.

The newest version of HEDIS, HEDIS 1999, includes a primary reporting set of 52 measures organized in eight general areas. Details for HEDIS 3.0, HEDIS 1999, as well as a description of the proposed changes between the two are provided at Appendix G. HEDIS is sponsored, supported, and maintained by the NCQA—a not-for-profit organization committed to evaluating and publicly reporting on the quality of managed care plans (NCQA, 1998). MCO reporting to HEDIS is voluntary and self-reported. While MCOs may withhold data on specific measures that they feel may compromise their market competitiveness, HEDIS' goal of public accountability is an important aspect of a comprehensive performance measurement system (Moore, 1997). HCFA's emphasis on HEDIS makes it an indispensable part of a Medicare performance measurement model.

Although the comparison of the AFMS PMT with the CRISP/HEDIS combination in Table 7 demonstrates variability in both indicator criteria and category makeup, closer examination of specific indicator specification closes the gap considerably. For example, the variance of the two categories showing a delta of over 20 percent (customer satisfaction, and utilization) is a result of indicator construction. The AFMS PMT collects access to care and utilization data as part of the customer satisfaction domain. Conversely, both HEDIS and CRISP tend to quantify utilization in terms of usage patterns and specific rates for selected diagnoses.

A similar situation is demonstrated within the overall quality domain. On the surface it appears that the AFMS PMT ignores outcome measures. However, further investigation illustrates that outcomes, while not explicitly defined, are embodied in preventive measures.

Emphasis on the process of proactive prevention versus retrospective outcome measurement is one of the AFMS PMT's strengths within the context of Medicare.

The construction of a model Medicare subvention performance measurement tool draws on the strengths of all three initiatives. The AFMS PMT provides the operational framework to measure an MHS accountable health plan. CRISP adds invaluable clinical outcomes measurement to refine the delivery of healthcare. Finally, HEDIS provides a necessary measure of public accountability by holding MHS's "feet to the fire." While the AFMS PMT and CRISP provide the means to monitor health plan performance, HEDIS provides the means to benchmark and report performance improvement—both necessary ingredients in the scoring of the Medicare subvention demonstration project. The proposed Medicare Subvention Demonstration Project performance measurement scheme with minimum performance indicators is provided (Table 8).

The model proposes a structural framework for MHS Medicare health plan performance measurement. Additional research is required in order to refine specific performance indicator definition and threshold development. Appropriateness of clinical outcomes measures is best determined by clinicians. Additionally, performance measurement systems must be constructed as dynamic, flexible "works-in-progress" capable of being easily modified and adapted to changing environments.

Although elements from these three initiatives provide great promise in MHS health plan performance measurement, several key issues surrounding the demonstration project remain. Benchmarking has been a popular "buzz word" in quality improvement circles over the last decade; however, herein lies a potential trap. As pointed out by Mason and Dawson (1998), it is critical to recognize the limitations of benchmarking. They point out that benchmarking may be

“measuring the wrong way to do the right thing.” All processes deserve a critical review to ensure efficiency and effectiveness.

Two other potential problems exist with benchmarking, especially at the national level. As touched on earlier in the discussion of HEDIS, many measurements are viewed as proprietary. Even those measures that are in the public domain may have originated from proprietary systems. Unless the specifications for performance indicators are defined, benchmarking loses its utility. Performance indicators that are useful as benchmarks must detail how the measure is calculated—where the numerator and denominator come from and what assumptions are built into the formula. Proprietary systems are not always willing to divulge the algorithms used by their programs (Mason and Dawson, 1998).

Data standardization is another key issue. With hundreds of medical information systems on the market, terminology differences abound. BJC Health System's Project Spectrum, one of the most progressive medical information projects in the country, demonstrates the difficulty of terminology standardization. Even within a single health system, the most complicated aspect of engineering a common hospital information system backbone that connects various hospital, diagnostic, and provider information systems was developing a data dictionary capable of reconciling the various system terminology differences (D. A. Streibig, personal communication, April 16, 1998).

Fortunately, MHS medical information system standardization has been a priority since the early 1990s (Hart and Connors, 1996). Standardization issues still exist between the various military departments; however, the obstacle within the MHS should be more easily overcome than within the industry as a whole. Full, DoD wide CEIS implementation is expected to be complete by Fiscal Year 1999 and will solve most terminology issues (CEIS (EA), 1997).

Table 8

Proposed Model Medicare Subvention Health Plan Performance Indicator Specifications

EVALUATION AREA	POSSIBLE INDICATOR
Technical Outcome Metrics ¹	
Population Health	
General health index ²	Disease-specific outcomes of care (using SF-36 and disease-specific function and symptom scale)
Baseline physical exams (chronic condition identification) ⁴	% of new Medicare enrollees who receive initial physical exam/health risk screening within the first 3 months
Identification of Enrolled Population	
Medicare DEERS enrolled ¹	% of Medicare-eligible members residing w/in 50 miles of the base where the MTF is physically located who are enrolled in DEERS
DEERS data quality ¹	% of MTF enrollees in TRICARE Prime that are identified in the DEERS database with the appropriate code in the provider code field
Epidemiological Assessment	
Prime HEAR ¹	% of TRICARE Prime enrolled to the MTF (Medicare-eligible) with a completed Health Enrollment Assessment Review (HEAR) within 3 months of the last day of the month enrolled
Managed Care: Clinical Preventive Svc	
Breast cancer screening ^{2,3}	% Women up to age 69 with Mammogram in the last 2 years ⁵
Mammogram result ¹	% of mammograms at the MTF for which the patient was informed of the results within 14 days of the date the test was performed
Cervical screening ^{2,3}	% Women age up to age 64 with Pap Smear in the last 3 years ⁵
Pap smear result ¹	% of all Pap smear tests reported to providers during a given month for which the patient was informed of results within 14 days of the date of the test
Prostate cancer screening ⁴	% Men who have had prostate exam/blood test in the last 2 years ⁵
Prostate exam results ⁴	% of prostate exams at the MTF for which the patient was informed of the results within 14 days of the date the test was performed
Cholesterol screening ³	% Patients who have had cholesterol checked in the last 2 years ⁵
Cholesterol results ³	% of patients with elevated HDL levels who received wellness counseling within 14 days of the

EVALUATION AREA	POSSIBLE INDICATOR
	date the test was performed
Eye exams for people with diabetes ³	% Diabetic patients with eye exam within the last 2 years ⁵
Immunization status ^{1,3}	% of Medicare enrollees who are current on their, Tetanus and Influenza immunizations
Episode Prevention	
Hospital admissions ³	Hospital Admissions per member per year
Preventable acute episode trend ^{2,3}	Frequency of preventable acute episodes within chronic conditions (emergency room visits for patients with asthma)
Illness-based medical care episodes ^{2,3}	Number of illness-based medical care episodes per member per year
New breast cancer cases ³	Percentage of new breast cancer cases classified as "advanced"
Episode Characteristics	
Hospital days ^{2,3}	Hospital days per 1,000 members
Services per episode ²	Number of services per episode (for selected diagnoses)
Managed Care: Case/Disease Management	
Case management activity ⁴	Number of members in active case management by chronic condition (CHF, diabetes, asthma, HIV, oncology)
Diabetic management ^{1,3}	% of diabetics tested for glycohemoglobin/hemoglobin A1C as ordered by an MTF provider during the past 12 months ⁵
Asthma management ^{1,3}	Ratio of asthmatic patients who are on preventive (or controller) asthma medications
Cardiovascular event management ³	Beta blocker treatment after a heart attack
Depression Management ^{1,3}	Prescription compliance ratio (number of consecutive monthly prescriptions filled divided by the number of prescriptions written)
Pharmacy Services Management	
Prescription drug consultation ^{3,4}	% New members who received prescription drug consultation within 3 months of enrollment
Outpatient drug utilization ³	Trends in outpatient drug utilization
Quality of Care ²	Compliance with standard care patterns (for selected diagnoses) ⁵
Customer Satisfaction Metrics ¹	
Access ^{1,3}	Satisfaction with access to appointments
Resources ¹	Satisfaction with access to system resources
Waiting time at appointment ¹	TRICARE encounter waiting time standards
Quality ^{1,2,3}	Satisfaction with technical quality
Health advice—annual ^{1,3}	Have healthcare providers given advice on ways to

EVALUATION AREA	POSSIBLE INDICATOR
	stay healthy
Waiting time for appointment ¹	Number of days between day appointment was made and the day of the appointment
Waiting time expectation ¹	Customer expectation of number of days to wait for an appointment to occur
Ease in making an appointment ¹	Ease of making an appointment by phone
Enrollment ^{1,3}	Enrollment in TRICARE Prime
Vote with their feet ¹	(Member turnover)
Health Advice—Outpatient ¹	Satisfaction with advice received about ways to avoid illness and stay healthy
Financial Metrics ¹	
Spendline ¹	Spendline (budget targets versus budget obligations)
Economic value (revenue) ¹	Economic value (market value that approximates opportunity revenue)
Operating expense ¹	Operating expense
Throughput ¹	Throughput (Economic value – Operating expense)
High-Occurrence/High-Cost DRGs ^{1,2}	High-Occurrence/High-Cost DRGs

Note. From a combination of:

¹ FY 98 Air Force Medical Service Performance Measurement Tool (Version 2.0), by the Office for Prevention and Health Services Assessment, Air Force Medical Service, 1998, Brooks Air Force Base, TX: Author;

² "Consortium Research on Indicators of System Performance (CRISP), by D. R. Nerenz, B. M. Zajac, and H. S. Rosman, 1993, The Joint Commission Journal on Quality Improvement, 19, 582;

³ NCQA HEDIS 1999 Draft Document, by the National Committee on Quality Assurance, 1998, [Text file]. URL <ftp://info.ncqa.org/ftp/heddraft.doc>; and

⁴ Various interview sources.

⁵ Specific performance indicator specifications (i.e. % of women with mammograms within last 2 years) were extracted from one of the sources cited and are included at this point for demonstration purposes. Additional refinement of measurement levels must be accomplished in conjunction with clinical personnel.

The final issue, while not entirely within the scope of performance measurement, significantly impacts the design and operation of measurement systems. All healthcare executives interviewed as part of this project stressed the importance of long-term versus short-term measurement, wellness and prevention versus treatment and reaction, and primary care investment versus specialty care expenditure. The problem lies in the fact that the Medicare

Subvention Demonstration Project will be evaluated over a three-year term. The first year consists of health plan definition and HCFA approval, leaving only two years to actively enroll and manage a Medicare population. Do project managers operationalize subvention with long-term, preventive, primary care processes in an attempt to raise the population's health status and impact hospital expenses in the out years? Or do they program short-term expenses in anticipation of being able to demonstrate to HCFA that they can provide "cheaper" care at the end of the demonstration period? The performance measurement system that supports the preferred course of action must define indicators based on that course of action—courses of action that are seemingly diametrically opposed.

Ultimate success in Medicare Subvention will be found in the successful execution of the Medicare health plan in two key areas. First of all, HCFA provides an open-book test for Medicare HMO operations—structure and process aspects of health plan performance measurement. The MHS is comfortable and well practiced in the area of compliance inspection since MTFs participate in the same accreditation programs as civilian institutions in addition to running their own version of inspection through the Inspector General function.

The second key area, managing population health at the right cost, is the area likely to "make or break" MHS operations. Early identification of chronic members, as well as potentially chronic members, followed by proactive prevention versus reactive intervention is the shortest path to providing appropriate health care at acceptable costs. The likelihood of success without effective performance measurement systems is low.

Either military or civilian health professionals can use results of the study to define or refine health plan performance measurement systems. Specifically, this study can aid in the design and evaluation of Medicare managed care service line products. Medicare Subvention

Project Officers and MTF Commanders will be able to track internal plan performance as the demonstration project progresses. Ultimate beneficiaries of an efficient, cost-effective, high quality Medicare health plan include HCFA, DoD, and countless Medicare-eligible retirees.

Sound performance measurement techniques can also be used to support business case analyses as well as make-versus-buy decisions. As the healthcare industry further evolves, the model may be used to evaluate existing and proposed programs. Additionally, resulting performance measurement schemes can be extrapolated for use with any healthcare insurance or healthcare delivery product.

Conclusions and Recommendations

With some modification MHS performance measurement systems appear to be adequate to evaluate Medicare Subvention Demonstration Project success.

This study proposes a best case model of health plan performance indicators. A question of significance, but beyond the scope of this study and perhaps an area of subsequent investigation, is the accuracy of data used in the proposed model.

Clearly, more similarities than differences exist between civilian and military health systems. Many of the data elements captured in each system are the same; however, the degree which these elements are used and how they are used in performance measurement differs significantly. MHS's relatively recent interest in accurately pricing the provision of healthcare services (TMA, 1998), results in a steep learning curve. Direct comparison of MHS and civilian Medicare health plan performance, particularly in the area of cost, may not be practical at this time.

The construction of an ideal Medicare subvention performance measurement tool draws on the strengths of three initiatives: AFMS PMT, CRISP, and HEDIS. AFMS PMT and CRISP

provide the means to monitor health plan performance and HEDIS provides the means to benchmark and report health plan performance improvement.

Specific recommendations include:

- (a) MHS embrace the AFMS PMT as the MHS standard
- (b) Enhance the AFMS PMT with clinical outcomes measures from CRISP and tailor measures for a Medicare population
- (c) Incorporate HEDIS in routine MHS health plan performance measurement
- (d) MHS consider participation in the Consortium Research on Indicators of System Performance outcomes measurement research
- (e) Challenge the MHS to take a long-term, patient-centered approach to Medicare subvention and for the GAO to score the demonstration project as such

At a minimum, the proposed performance measurement model at Table 8 provides a **conceptual framework** for the development of organization-specific measurement tools. Final definition of individual performance indicators is a matter of coordination among the organization's management, clinical, and information system elements. Management's function is to ensure resulting performance indicators are linked to the organization's mission. Clinical expertise is paramount to linking health plan performance measurement to meaningful outcomes measurement. Finally, information system personnel are vital in making the process operationally possible. A well conceived, thoughtfully designed, technically sound performance measurement system arms health plan managers with the tools needed to serve both the organization and the customer.

Medicare managed care success is dependent on two primary goals: reduction of inpatient utilization and managing care along the continuum of services (beginning with early

detection and prevention of chronic conditions). The MHS enjoys two distinct advantages that serve as a bridge to this success. Health and demographic information is available for all potential members and the MHS possesses control over the majority of the care continuum. Timely, effective performance measurement is critical in attaining Medicare risk plan success.

Appendix A

Acronym List

AFMS	Air Force Medical Service
CAHPS	Consumer Assessments of Health Plans Study
CEIS	Corporate Executive Information System
CEIS (EA)	Corporate Executive Information System Executive Agent
CHP	Comprehensive Health Planning
CHAMP	Comprehensive Healthcare Analysis and Management Program
CRISP	Consortium Research on Indicators of System Performance
DHP	Defense Health Plan
DoD	Department of Defense
DRG	Diagnostic Related Group
EBC	Enrolment-Based Capitation
FAcct	Foundation for Accountability
GAO	General Accounting Office
HCAB	Health Care Advisory Board
HCFA	Health Care Financing Administration
HEDIS	Health Plan Employer Data and Information Set
HFHS	Henry Ford Health System
HMO	Health Maintenance Organization
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
LOE	Level of Effort
MCO	Managed Care Organization

MEPRS	Medical Expense and Performance Reporting System
MRSP	Medical Readiness Strategic Plan
MHS	Military Health Service
MHSS	Military Health Service System
MSO	Medical Service Organization
MTF	Military Treatment Facility
NCQA	National Committee for Quality Assurance
OSD (HA)	Office of the Assistant Secretary of Defense for Health Affairs
PCM	Primary Care Manager
PMT	Performance Measurement Tool (AFMS PMT)
PRC	Performance Report Card (MHS PRC)
RMP	Regional Medical Programs
TMA	TRICARE Management Activity
WWW	World Wide Web

Appendix B

MHS Medical Information Systems

ACRONYM	TITLE	DESCRIPTION
ADS-OMR	Ambulatory Data System Optical Mark-Sense Reader	ADS is the interim solution to outpatient encounter information; ADS will be replaced by the capabilities of CIW when it comes online
CDIS	CHAMPUS Detail Information System	Supports online, near real-time accessing and retrieval of individual detailed CHAMPUS information
CEIS	Corporate Executive Information System	A decision support system focused on the collection, integration, information organization, and display of the information, primarily drawn from other needed by MTF commanders and other managers, to make more effective management decisions
CHCS	Composite Health Care System	CHCS is a primary source data collection system in the MHS, providing data for the PAS, PAD, LAB, RAD, Clinical PHARM, and Nursing; CHCS creates a portion of the electronic record data that exists today
CIS	Clinical Information System	The patient-focused clinical arm of the managed care initiative combining the efforts of the patient-focused (Nursing) and special care units through an interdisciplinary covering critical paths, and clinical management
CIW	Clinical Workstation	Provides a seamless integrated clinical within a subset of the functionality encompassed by the Provider Workstation (PWS), Ambulatory Data Collection system (ADCS), Inpatient Order Entry (IPOE), Outpatient Order Entry (OPOE), CIS, and MDIS
DMHRS	Defense Medical Resource System	Provides automated system support calculating military and civilian labor time and cost for DoD health care activities
DMLSS	Defense Medical Standard Support	Provides automated support for the of facilities, technology, equipment, supplies, and services within MHSS in peacetime and wartime
MEPRS/ EAS IV	Medical Expense and Performance Reporting System/Expense Assignment System (v. IV)	A proposed system to provide support for standardized reporting of expenses, manpower, and workload data at the work center level within DoD, facilities
PWS	Provider Workstation	The provider interface to CHCS for placing orders; PWS is the core capability for CIW and

ACRONYM	TITLE	DESCRIPTION
		has been absorbed into the CIW program
SPS/EPS	Space Planning System/Equipment Planning System	Provides automated estimate of the size and functional requirement for health care and medical research facilities, using DoD established medical space planning criteria
TPOCS	Third Party Outpatient Collection System	Is a DoD standard system that assists MTFs in the collection, tracking, and reporting of data required in the outpatient insurance billing process

Note. Data extracted from "A Resource Decision Model for Military Hospitals," by S. E. Hart and R. E. Connors, 1996, *Military Medicine*, 161 [WWW document]. URL <http://hawww.ha.osd.mil/main/hartdoc.html> and "P3 System Descriptions," by the Office of the Assistant Secretary of Defense, Health Affairs, 1998, *IPPSRS P3 System Descriptions* [WWW document]. URL <http://www.ha.osd.mil/dmim/imit/p3sysdes.html>.

Appendix C

Air Force Medical Service Performance Measurement Tool (AFMS PMT) Indicator Specifications (1997)

EVALUATION AREA	INDICATOR
Technical Outcome Metrics	
Identification of Enrolled Population	
Active duty DEERS enrolled	% of ADAF members assigned to the base where the MTF is physically located who are enrolled in DEERS
DEERS data quality	% of MTF enrollees in TRICARE Prime that are identified in the DEERS database with the appropriate code in the provider code field
Epidemiological Assessment	
Prime HEAR	% of TRICARE Prime enrolled to the MTF (age 17 and older) with a completed Health Enrollment Assessment Review (HEAR) within 3 months of the last day of the month enrolled
Managed Care: Clinical Preventive Svc	
Mammogram result	% of mammograms at the MTF for which the patient was informed of the results within 14 days of the date the test was performed
Pap smear result	% of all Pap smear tests reported to providers during a given month for which the patient was informed of results within 14 days of the date of the test
Managed Care: Disease Management	
Diabetic management	% of diabetics >18 years old tested for glycohemoglobin/hemoglobin A1C as ordered by an MTF provider during the past 12 months
Asthma management	Ratio of asthmatic patients age 39 or less who are on preventive (or controller) asthma medications
Operational Metrics	
Immunization status	% of active duty members assigned to the base where the MTF is physically located who are current on their Hepatitis A, Tetanus, and Influenza immunizations
Dental status	% of active duty Air Force members on the base where the MTF is physically located who are in Dental Class 1 or 2
Fitness	% of active duty Air Force members on the adjusted base alpha roster who tested and met fitness standards according to the FIT management database

EVALUATION AREA	INDICATOR
PHA completion	Health assessment of the deployable force
Mission Availability	
Lost time due to medical events	Mission availability: Medically related lost duty days
Customer Satisfaction Metrics	
Access	Satisfaction with access to appointments
Resources	Satisfaction with access to system resources
Waiting time at appointment	TRICARE encounter waiting time standards
Quality	Satisfaction with technical quality
Health advice -- annual	Have healthcare providers given advice on ways to stay healthy
Waiting time for appointment	Number of days between day appointment was made and the day of the appointment
Waiting time expectation	Customer expectation of number of days to wait for an appointment to occur
Ease in making an appointment	Ease of making an appointment by phone
Enrollment	Enrollment in TRICARE Prime
Vote with their feet	(Member turnover)
Health Advice--Outpatient	Satisfaction with advice received about ways to avoid illness and stay healthy
Financial Metrics	
Spendline	Spendline
Economic value (revenue)	Economic value (revenue)
Operating expense	Operating expense
Throughput	Throughput

Note. From FY 98 Air Force Medical Service Performance Measurement Tool (Version 2.0), by the Office for Prevention and Health Services Assessment, Air Force Medical Service, 1998, Brooks Air Force Base, TX: Author.

Appendix D

MHS Performance Report Card Indicator Specifications (1997)

PERFORMANCE MEASURE	DESCRIPTION
Access	
Satisfaction with Access to Appointments	% Military MTF users rating 4 access areas including appointments and office waiting, rating between good and excellent
Satisfaction with Access to System Resources	% Military MTF users rating 2 access areas, convenience and access to a specialist, rating between good and excellent
% Meeting Appointment Waiting Standards	% Military MTF users waiting no more than one week from scheduling appointment to seeing provider for an acute illness or injury
Prime AD Enrollment Rates	% AD enrolled and assigned a primary care manager
Quality	
Medical Readiness Trained & Certified	% AD privileged providers assigned to a mobility platform with sustained medical readiness training verified by the commander
Dental Readiness	% AD in Dental Class 1& 2
Satisfaction with Quality	% Military MTF users rating 5 quality areas including, thoroughness of treatment, final results, and overall quality and service, rating between good and excellent
% Women Age 21-64 w/Pap Smear (Last 3 Yrs)	% Women age 21 - 64 with Pap Smear in the last 3 years
% Women Age 52-69 w/Mammogram (Last 2 Yrs)	% Women age 52 - 69 with Mammogram in the last 2 years
% Pop w/Cholesterol Screen (Last 5 Yrs)	% Patients who have had cholesterol checked in the last 5 years
Childhood Immunization Rates	% Children at age 2 that have completed basic immunization series
JCAHO Grid Scores	Latest JCAHO Grid Score
JCAHO Accreditation	Latest accreditation status
Utilization	
AD Preventable Admission Rates Chronic Obstructive Pulmonary Disease Bacterial Pneumonia Asthma Congestive Heart Failure Angina Cellulitis Diabetes Gastroenteritis Kidney/Urinary Infections	Measures AD admissions per 1000 for diagnoses where timely and effective outpatient care reduces risk of hospitalization

PERFORMANCE MEASURE	DESCRIPTION
ADFM Preventable Admission Rates Chronic Obstructive Pulmonary Disease Bacterial Pneumonia Asthma Congestive Heart Failure Angina Cellulitis Diabetes Gastroenteritis Kidney/Urinary Infections	Measures AD family member (age 18+) admissions per 1000 for diagnoses where timely and effective outpatient care reduces risk of hospitalization
AD Bed Day Rates	AD bed day rates per 1000. Excludes major diagnostic categories relating to obstetrics (MDCs 14 & 15) and mental health/substance abuse (MDCs 19 & 20)
ADFM Bed Day Rates	ADFM bed day rates per 1000. Excludes major diagnostic categories relating to obstetrics (MDCs 14 & 15) and mental health/substance abuse (MDCs 19 & 20)
Health Behaviors	
% AD Smoked Last 30 Days	% AD reporting smoking any cigarettes in the past 30 days
% AD Problem Drinkers	% AD reporting serious consequences associated w/ alcohol in past year
% AD Dependent on Alcohol	% AD reporting signs and symptoms of alcohol dependence (e.g., sickness from drinking, becoming intoxicated, shaking hands, etc.) for more than 48 days in the last 12 months
Health Status	
Perceived Physical Health - AD	Self-reported health status scores measures individual perception of their physical health using the Rand SF-12
Perceived Physical Health - ADFM	Self-reported health status scores measures individual perception of their physical health using the Rand SF-12
Perceived Mental Health - AD	Self-reported health status scores measures individual perception of their mental health using the Rand SF-12
Perceived Mental Health - ADFM	Self-reported health status scores measures individual perception of their mental health using the Rand SF-12

Note. From "MHS Performance Report Card Measurement Definitions," by Health Services Analysis and Measurement, 1997, [WWW document]. URL <http://www.ha.osd.mil/milonly/reptcard/defsept.htm>

Appendix E

Consortium Research on Indicators of System Performance (CRISP) Indicator Specifications (1993)

EVALUATION AREA	INDICATOR
TIER I Indicators	
Population Health	General health index (SF-36)
	Prevention index [health risk appraisal]
Community Benefit	Proportion of system expenses devoted to charity care
Quality of Care	Hospital readmission rate
Episode Prevention	Hospital Admissions per member per year
	Low birthweight incidences
Episode Characteristics	Number of services per episode (for selected diagnoses)
	Hospital days per 1,000 members
Satisfaction	GHAA member satisfaction survey
Efficiency	Percent of system expenses for administration
Financial Performance	Profitability
	Debt-service coverage ratios
TIER II Indicators	
Population Health	Disease-specific outcomes of care (using SF-36 and disease-specific function and symptom scale)
Quality of Care	Compliance with standard care patterns (for selected diagnoses)
Episode Characteristics	Redundancy of services provided within episodes
Episode Prevention	Frequency of preventable acute episodes within chronic conditions (emergency room visits for patients with asthma)
	Illness-based medical care episodes per member pre year
	Percentage of new breast cancer cases classified as "advanced"

Note. From "Consortium Research on Indicators of System Performance (CRISP), by D. R. Nerenz, B. M. Zajac, and H. S. Rosman, 1993, The Joint Commission Journal on Quality Improvement, 19, 582.

Appendix F

Comprehensive Healthcare Analysis and Management Program Indicator Specifications (1997)**Expense and Utilization**

Claims payment summary
 Statistical trends
 Year-over-year trends, year-to-date analysis

Plan Performance Evaluation

Changes in number of enrollees
 Changes in number and expense of high cost claimants
 Shift in age/sex composition of population

Clinical Profiles

Most prevalent and costly diagnoses and procedures
 Intervention program identification
 Utilization review effectiveness

Provider Analysis

Comparison of top providers on billed, covered, and paid expenses
 High expense, high utilization, and high price providers
 Cesarean section rates
 Surgery rates
 Referral patterns

Benefit Modeling

Distribution of expenses and services
 Number of individuals incurring more than \$30,000 in the past 12 months
 Maximum payment schedule/utilization maximum level development

Financial Management

Comparative financial summary
 Rate setting
 Reserve analysis
 Cost allocation

Large Case Management

Identification of high expense claimants
 Target preventive intervention programs

Enrollment Analysis

Enrollment summaries by relation, tier, age, sex, and zip code

Note. From Comprehensive Healthcare Analysis and Management Program, by W. M. Mercer, Inc., 1997, [Brochure], New York: Author.

Appendix G

HEDIS 3.0 and HEDIS 1999 Performance Indicator Specifications

HEDIS 3.0/1998 Specifications	HEDIS 1999 Specifications	HEDIS 1999 Specifications (changes from HEDIS 3.0)
EFFECTIVENESS OF CARE	EFFECTIVENESS OF CARE	
Childhood Immunization Status	Childhood Immunization Status	Modifications to antigen-specific and combination rates and CPT codes.
Adolescent Immunization Status	Adolescent Immunization Status	Modifications to CPT codes and documentation requirements.
Advising Smokers to Quit	Advising Smokers to Quit	
Flu Shots for Older Adults	Flu Shots for Older Adults	
Breast Cancer Screening	Breast Cancer Screening	
Cervical Cancer Screening	Cervical Cancer Screening	
Prenatal Care in the First Trimester	Prenatal Care in the First Trimester	
Low Birth-Weight Babies	Low Birth-Weight Babies	Moratorium continued.
Check-Ups After Delivery	Check-Ups After Delivery	
Beta Blocker Treatment After a Heart Attack	Beta Blocker Treatment After a Heart Attack	Clarification on prescriptions rendered 30 days prior to admission.
Eye Exams for People with Diabetes	Eye Exams for People with Diabetes	
	Cholesterol Management After Acute Cardiovascular Events	New measure.
The Health of Seniors	The Health of Seniors	
Follow-Up After Hospitalization for Mental Illness	Follow-Up After Hospitalization for Mental Illness	Seven-day ambulatory or day/night follow-up added.
	Antidepressant Management	New measure.
	Comprehensive Diabetes Care	Possible new measure. Ongoing work is underway to develop the technical specifications.
ACCESS/AVAILABILITY OF CARE	ACCESS/AVAILABILITY OF CARE	
Adults' Access to Preventive/Ambulatory Health Services	Adults' Access to Preventive/Ambulatory Health Services	
Children's Access to Primary	Children's Access to Primary	Modifications to CPT codes.

HEDIS 3.0/1998 Specifications	HEDIS 1999 Specifications	HEDIS 1999 Specifications (changes from HEDIS 3.0)
Care Providers	Care Providers	
Availability of Primary Care Providers		Measure retired.
Availability of Behavioral Health Care Providers		Measure retired.
Availability of Obstetrical and Prenatal Care Providers		Measure retired.
Initiation of Prenatal Care	Initiation of Prenatal Care	Language clarified.
Low Birth-Weight Deliveries at Facilities for High-Risk Deliveries & Neonates	Low Birth-Weight Deliveries at Facilities for High-Risk Deliveries & Neonates	Moratorium continued.
ACCESS/AVAILABILITY OF CARE (continued)	ACCESS/AVAILABILITY OF CARE (continued)	
Annual Dental Visit	Annual Dental Visit	
Availability of Dentists		Measure retired.
Availability of Language Interpretation Services	Availability of Language Interpretation Services	
SATISFACTION WITH THE EXPERIENCE OF CARE	SATISFACTION WITH THE EXPERIENCE OF CARE	
HEDIS Consumer Survey (commercial, Medicaid)	HEDIS Consumer Survey (commercial, Medicaid)	New survey instrument.
Experiences with Children's Care Survey (commercial, Medicaid)	Experiences with Children's Care Survey (commercial, Medicaid)	New survey instrument.
HEALTH PLAN STABILITY	HEALTH PLAN STABILITY	
Disenrollment	Disenrollment	
Provider Turnover	Provider Turnover	
Years in Business/Total Membership	Years in Business/Total Membership	
Indicators of Financial Stability	Indicators of Financial Stability	
USE OF SERVICES	USE OF SERVICES	
Frequency of Ongoing Prenatal Care	Frequency of Ongoing Prenatal Care	Language clarified.
Well-Child Visits in the First	Well-Child Visits in the First	Medical record documentation

HEDIS 3.0/1998 Specifications	HEDIS 1999 Specifications	HEDIS 1999 Specifications (changes from HEDIS 3.0)
15 Months of Life	15 Months of Life	requirements will be modified.
Well-Child Visits in the Third, Fourth, Fifth and Sixth Year of Life	Well-Child Visits in the Third, Fourth, Fifth and Sixth Year of Life	Medical record documentation requirements will be modified.
Adolescent Well-Care Visit	Adolescent Well-Care Visit	Medical record documentation requirements will be modified.
Frequency of Selected Procedures	Frequency of Selected Procedures	Procedures modified.
Inpatient Utilization--General Hospital/Acute Care	Inpatient Utilization--General Hospital/Acute Care	
Ambulatory Care	Ambulatory Care	Clarification on how to identify and count certain ambulatory services.
Inpatient Utilization--Non-Acute Care	Inpatient Utilization--Non-Acute Care	
Discharge and Average Length of Stay--Maternity Care	Discharge and Average Length of Stay--Maternity Care	
Cesarean Section and Vaginal Birth After Cesarean Rate (VBAC-Rate)	Cesarean Section and Vaginal Birth After Cesarean Rate (VBAC-Rate)	
Births and Average Length of Stay, Newborns	Births and Average Length of Stay, Newborns	Language and Table 5I clarified.
Mental Health Utilization--Inpatient Discharges and Average Length of Stay	Mental Health Utilization--Inpatient Discharges and Average Length of Stay	
Mental Health Utilization--Percentage of Members Receiving Inpatient, Day/Night and Ambulatory Services	Mental Health Utilization--Percentage of Members Receiving Inpatient, Day/Night and Ambulatory Services	
Readmission For Specified Mental Health Disorders		Measure retired.
Chemical Dependency Utilization--Inpatient Discharges and Average Length of Stay	Chemical Dependency Utilization--Inpatient Discharges and Average Length of Stay	
Chemical Dependency Utilization--Percentage of Members Receiving Inpatient, Day/Night Care and Ambulatory Services	Chemical Dependency Utilization--Percentage of Members Receiving Inpatient, Day/Night Care and Ambulatory Services	
Readmission for Chemical Dependency		Measure retired.
Outpatient Drug Utilization	Outpatient Drug Utilization	Language clarified.

HEDIS 3.0/1998 Specifications	HEDIS 1999 Specifications	HEDIS 1999 Specifications (changes from HEDIS 3.0)
COST OF CARE	COST OF CARE	
Rate Trends	Rate Trends	Language clarified.
High-Occurrence/High-Cost DRGs	High-Occurrence/High-Cost DRGs	
HEALTH PLAN DESCRIPTIVE INFORMATION	HEALTH PLAN DESCRIPTIVE INFORMATION	
Board Certification/Residency Completion	Board Certification/Residency Completion	
Provider Compensation	Provider Compensation	
Arrangements with Public Health, Educational and Social Service Organizations	Arrangements with Public Health, Educational and Social Service Organizations	
Total Enrollment	Total Enrollment	
Enrollment by Payer (Member Years/Months)	Enrollment by Payer (Member Years/Months)	
Unduplicated Count of Medicaid Members	Unduplicated Count of Medicaid Members	
Cultural Diversity of Medicaid Membership	Cultural Diversity of Medicaid Membership	
Weeks of Pregnancy at Time of Enrollment in the Health Plan	Weeks of Pregnancy at Time of Enrollment in the Health Plan	

Note. From NCQA HEDIS 1999 Draft Document, by the National Committee on Quality Assurance, 1998, [Text file]. URL <ftp://info.ncqa.org/ftp/heddraft.doc>

Appendix H

Health Care Advisory Board (HCAB) Study Indicator Specifications (1996)**PERFORMANCE INDICATOR****Appropriateness Indicators**

Transurethral Resection of the Prostate (TURP)/100 Discharges

Total number Total Joint Replacements

Percentage complications, Laparoscopic Cholecystectomies

Total Open Cholecystectomies

Hysterectomies

Cardiac Catheterization

Total Number Back Procedures w/cc - DRG 214

Total Number Back Procedures w/o cc - DRG 215

Total Number of Backs

Total Number DRG 214 & 215/100 Discharges

Community Benefit Indicators

Percent Occupancy Licensed Beds

Percent Occupancy Staffed Beds

Percent Live Births<2500 grams

Comorbidities

Percent Discharges with Diabetes Mellitus

Percent Discharges with Congestive Heart Failure (CHF)

Percent Discharges with Cancer

Percent Discharges with Myocardial Infarction (MI)

Percent Discharges with Chronic Renal Failure

Percent Discharges with Pneumonia (COPD)

Efficiency Indicators

Acute Care Length of Stay (LOS)

Acute Care Discharge

Medicare LOS

Finance Indicators

Percent Medicare Discharges

Percent Medicaid Discharges

Percent of Total Discharges Medicare/Medicaid

Percent Managed/Contracted Care Discharges

Maternal/Child Care Indicators

Average Maternal LOS

Average Maternal Total Charges

Number of Deliveries

Percent Primary Cesarean Sections (C-Sections)

Percent Repeat C-Sections
 Percent Vaginal Birth After Cesareans (VBACs)
 Total C-Section Rate
 Percent Neonatal Mortality
 Percent Birth Complications

Nursing Staffing Indicators

Nursing Staffing Ratios-% RN, % LPN, % Licensed, % Unlicensed
 Ancillary Cost
 Nursing Turnover Rate

Outcome Indicators

Case Mix, All Patients
 Number of Acute MIs; DRGs 121, 122, 123
 Acute MI Mortality Rate
 Acute MI ALOS
 Acute MI Average Total Charges
 Number of Coronary Artery Bypass Grafts (CABGs); DRGs 106 & 107
 CABG ALOS
 CABG Average Total Charges
 Percent CABGs With Cath
 Total Percutaneous Transluminal Angioplasty (PTCAs) cases
 Number of Cases Pneumonia; DRGs 89 & 90
 Pneumonia Mortality Rate
 Pneumonia ALOS
 Pneumonia Average Total Charges
 Number of Cases Respiratory Infections with Complication/ Comorbidity; DRG 79
 Respiratory Infection Mortality Rate
 Respiratory Infection ALOS
 Respiratory Infection Average Total Charges
 Number of Cases Cerebrovascular Accident (CVA) Except TIA (Transient ischemia attacks); DRG 014
 CVA Mortality Rate
 CVA ALOS
 CVA Average Total Charges
 Number of Cases CHF; DRG 127
 CHF Mortality Rate
 CHF ALOS
 CHF Average Total Charges
 Number Total Joint Replacements (TJR) Lower Extremities
 TJR Mortality Rate
 TJR ALOS
 TJR Average Total Charges
 TJR Average Severity
 Number of Acute Myocardial Infarctions (AMI) by ICD-9 Codes 410.0-410.9
 AMI Mortality Rate by ICD-9 Codes 410.0-410.9

Prevention Indicators

Emergency Room (ER) Visits/100,000 Population
Percent ER Stays > 6 Hours
Percent Returns to the Emergency Department w/in 72 Hours
Readmissions w/in 31 Days of Discharge
Percent of ER Patient Admitted to the Hospital
Rate of ER Patients Admitted to the Hospital
Rate of Immunization Preventable Pneumonia and Influenza in the Elderly
Pediatric Asthma Discharge Rate

Quality Indicators

Adverse Drug Reaction Rate
Inpatient Mortality Rate
Perioperative Mortality Rate

Risk Indicators

Number of Maternal Transfers
Falls/100 Patient Days
Medication Discrepancies
Biliary Tract Injury w/ Laparoscopic Cholecystectomy Rate

Customer Satisfaction Indicators

Hospital Care and Services
Admission Process
Housekeeping Services
Nursing Staff
Hospital Employees
Food
Physician Care
Emotional Support
Respect for Privacy and Dignity
Discharge Process
Rate Health Now
Perception of Outcome

Severity Indicators

ER as Admit Source
Case Mix All Patients
Percent Comorbidities

Note. From "Hospital-Wide Quality Data Indicators," by the Health Care Advisory Board, 1996, The Advisory Board Company.

Appendix I

Health Care Advisory Board (HCAB) Study Indicator Specifications (1995)**PERFORMANCE MEASURES****General Indicators**

Average hospital census
 Average length of stay
 Changes in the number of lab tests per patient
 Inpatient and outpatient activity trends
 Memberships—number of subscribers
 Number of admissions
 Number of deliveries
 Number of emergency room visits
 Plans for new facilities and equipment
 Reassignment pool progress for displaced employees
 Update on advertising campaign
 Updates on case management and utilization review
 Updates on mental health and rehabilitation strategic plans
 Voluntary member renewal rate

Community Service

County death rates per 100,000 population
 Infant mortality—deaths per 1,000 live births
 Number of calls received by physician referral and health information resource
 Percent immunization rate by age 2
 Prenatal care—percent of pregnant women beginning care in first trimester
 System-wide contributions to community benefits
 Uncompensated care—percent of total revenue
 Uninsured—percent of total population without health insurance
 Updates on charitable campaigns

Financial Performance

Accounts receivable—net days outstanding by quarter
 Administrative expenses—per member month
 Ambulatory surgery discharges
 Anecdotes on specific cost saving measures
 Average monthly premium by HMO
 Consolidated excess margin
 Consolidated expenses—percent change
 Days of cash on hand
 Expenses—per member month/per member per month
 Fringe benefits—percent change
 HMO enrollees for area HMOs
 Hospital non-Medicare patient days per 1,000 members
 Hospitals' unreimbursed charges related to Medicare and Medicaid discounts, indigent care, and

- bad debt
- Net income
- Occupancy—retirement center, elderhouse, and health center
- Other medical expenses—per member month
- Patient/customer service performance measures
- Payor mix—inpatient activity
- Payor mix—outpatient activity
- Physician/Professional service—expenses per member month
- Projected income from operations for fiscal year and explanations for changes from previous years
- Reduction of controllable expenses per adjusted admission
- Salaries—percent change
- Share of patient discharges in 12 county market
- State employee bids—family coverage
- Supplies and other expenses—percent change

Quality Statistics

- Changes in Cesarean section rates
- Employee recognition programs
- Highlights of achievement and trends in different departments
- Highlights of outstanding achievements in patient satisfaction reports
- Information on departmental consolidation, integration, and management
- Mammography screening—percent of women between 50 and 65 years of age who have been screened (year to date)
- Number of new quality improvement teams and amount of associated annual savings and cost avoidance
- Number of quality teams
- Prenatal care—percent of women who received prenatal care in the first trimester
- Quality and cost savings updates
- Updates on progress in patient-focused care

Customer-Related Indicators

- Customer satisfaction reports
- Medication errors per 10,000 doses—monthly
- Percent of members who maintain primary care manager
- Satisfaction with ability to schedule visits

Note. From “Internal Performance Indicators,” by the Health Care Advisory Board, 1995, The Advisory Board Company.

Appendix J

Data Codebook

Variable Number	Code Description	Entry Value	Software Variable Name
1	Initiative Name		INIT_NAM
	HEDIS 3.0/99	1	
	CRISP	2	
	CHAMP	3	
	AFMS PMT	4	
	MHS PRC	5	
	HCAB Study	6	
2	Initiative Type		INIT_TYP
	military	1	
	civilian	2	
3	Indicator Category		INDI_CAT
	financial performance	1	
	customer satisfaction	2	
	quality—general	3	
	quality—preventive	4	
	quality—clinical outcome	5	
	quality—disease mgt	6	
	quality—access to care	7	
	community service	8	
	utilization	9	
	enrollment	10	
	population	11	
	other	12	
4	Indicator Criteria		INDI_CRIT
	process	1	
	outcome	2	
	structure	3	

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